

PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (<http://bmjopen.bmj.com/site/about/resources/checklist.pdf>) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

| | |
|----------------------------|---|
| TITLE (PROVISIONAL) | Association between administration or recommendation of the human papillomavirus vaccine and primary care physicians' knowledge about vaccination during proactive recommendation suspension: a nationwide cross-sectional study in Japan |
| AUTHORS | Sakanishi, Yuta; Takeuchi, Jiro; Suganaga, Rei; Nakayama, Kuniko; Nishioka, Yosuke; Chiba, Hiroshi; Kishi, Tomomi; Machino, Ako; Mastumura, Mami; Okada, Tadao; Suzuki, Tomio |

VERSION 1 – REVIEW

| | |
|------------------------|---------------------------------------|
| REVIEWER | Rancic, Natasa K University of Nis |
| REVIEW RETURNED | 17-May-2023 |

| | |
|-------------------------|---|
| GENERAL COMMENTS | Respected Authors, The Abstract is well written, the title is clear as well as the objective of the paper. The methodology is described in detail and the findings are clearly presented. The objective, findings and the conclusion are in agreement. |
|-------------------------|---|

| | |
|------------------------|--|
| REVIEWER | Kahn, Benjamin University of North Carolina Research Opportunities Initiative, Health Behavior |
| REVIEW RETURNED | 12-Jul-2023 |

| | |
|-------------------------|--|
| GENERAL COMMENTS | <p>Thank you for the opportunity to review this article. I am noting my specific concerns for the authors here:</p> <p>Abstract:</p> <ul style="list-style-type: none">-Add more detail to the "Design" subheading.-For "Participants," why does this only list the exclusion criteria? I would delete this and instead describe the inclusion criteria--e.g., talk about who was included rather than who was excluded.-For outcome measures, there is an issue with the way the authors describe their outcomes. The outcomes should be framed as either HPV vaccine administration (primary) and HPV vaccine recommendation (secondary). Then, you can separately discuss the interest in the association and the methods used for exploring the hypothesized associations.-In results, the 20.1% listed is very confusing and doesn't make sense until you read the full text. I would remove.-The "Conclusions" section should go further than reiterating the association that was found, and instead discuss the implications of the association.-Consider replacing one of the "Strengths and Limitations of this Study" bullet—perhaps the one describing the use of multivariable |
|-------------------------|--|

| | |
|--|--|
| | <p>logistic regression—to say something more interesting about the implications of the work.</p> <p>Introduction: -In the introduction, it would be helpful to have a bit more context about the “adverse event” issue for uninitiated readers.</p> <p>Methods: -In the discussion of the questionnaire, is the list of measures complete? All relevant items should be described. -As noted in my comment about the abstract, the main outcome should not be the association. The outcomes should be the provider behaviors assessed in the survey. So the primary outcome should be HPV vaccine administration, and the secondary outcome should be HPV vaccine recommendation. The authors should make this clearer and then describe their interest in the hypothesized associations. -For the section on main factor, it would be clearer if they identified the vaccination quiz score as a predictor. Since the quiz is so important to the analysis, it would also be important to list all questions that were asked in the quiz. Perhaps including these 6 items in a table, figure, or bulleted/numbered list would work well. -Also for the main factor: Why did the authors choose to turn the vaccination quiz score into a binary variable? Why not treat this as a continuous or count variable if it is a score? The authors should consider this, and if they keep it, provide justification for this decision. -Consider language when listing “possible confounders.” More simply, these could be identified as other factors included in analyses.</p> <p>Results: -It would be helpful to have more description somewhere earlier in the paper about the distinction between routine and voluntary HPV vaccination in Japan. Perhaps I missed it, but I found myself getting a bit lost in the results because of a lack of clarity around this topic. -Is there any way to understand the overlap between those who administered the vaccine and those who recommended the vaccine? It seems like those two behaviors may themselves be linked.</p> <p>Conclusion: -I think it may be worth spending some time revising the conclusion, because as written, it felt like it was largely restating the findings from the results and summarizing findings from other related literature. It would help strengthen the article if there were a clearer discussion of the implications of the main findings, and if the authors were able to more succinctly link these findings to the other relevant research that is cited. -In the first paragraph of this section, I also found some of the comparisons to data from earlier findings confusing. It would help if the writing in this section were a bit shorter and clearer. I was also confused by the distinction between PCP and pediatrics/others, since some pediatricians are PCPs. Can the authors clarify this? -Make the “take-home message” in the last conclusion paragraph stronger, this will really help tie together the whole section (see comments above).</p> <p>Tables and Figures:</p> |
|--|--|

| | |
|--|--|
| | <p>-In Table 1, the 2 columns are very confusing. I would eliminate the column that includes responders (n=1084) and only include the column on participants in the analysis (n=981). This would make the table much clearer.</p> <p>-There are quite a lot of tables listing the associated factors. Is there any way to consolidate these tables, such that there are 2 rather than 4 tables? E.g., bundling the tables on recommendation and administration, or the tables on routine and voluntary, etc.</p> <p>-The flow chart on the number of JPCA members and the number of participants in the study seems unnecessary since this is already described in the text.</p> |
|--|--|

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

Dr. Natasa K Rancic, University of Nis

Comments to the Author:

Respected Authors,

The Abstract is well written, the title is clear as well as the objective of the paper. The methodology is described in detail and the findings are clearly presented. The objective, findings and the conclusion are in agreement.

Response: We thank Reviewer 1 for these insightful and encouraging comments.

Reviewer: 2

Dr. Benjamin Kahn, University of North Carolina Research Opportunities Initiative

Comments to the Author:

Thank you for the opportunity to review this article. I am noting my specific concerns for the authors here:

Response: We wish to express our appreciation to Reviewer 2 for these insightful comments. They helped us to considerably improve our manuscript.

Comment 1: Abstract:-Add more detail to the "Design" subheading.

Response: Thank you for this suggestion. Accordingly, we have added more details to the Abstract 'Design' section as follows (p. 3, lines 10–11).

Cross-sectional study analysed data obtained through a web-based, self-administered questionnaire survey.

Comment 2: -For "Participants," why does this only list the exclusion criteria? I would delete this and instead describe the inclusion criteria--e.g., talk about who was included rather than who was excluded.

Response: Thank you for this suggestion. In keeping with it, we have deleted the exclusion criteria and added the following text on p. 3, lines 14-15.

JPCA members who were physicians and on the official JPCA mailing list (n=5,395) were included.

Comment 3: -For outcome measures, there is an issue with the way the authors describe their outcomes. The outcomes should be framed as either HPV vaccine administration (primary) and HPV vaccine recommendation (secondary). Then, you can separately discuss the interest in the association and the methods used for exploring the hypothesized associations.

Response: Thank you for raising this point and for the suggestion. Accordingly, we have framed the outcomes as HPV vaccine administration (primary outcome) and recommendation (secondary outcome) on p. 3, lines 19-p. 4, lines 2.

The primary and secondary outcomes were the administration and recommendation of HPVv, respectively, by PCPs. The association between PCPs' knowledge regarding vaccination and each outcome was determined based on their background and vaccination quiz scores and a logistic regression analysis to estimate the adjusted odds ratios (AORs).

Comment 4: -In results, the 20.1% listed is very confusing and doesn't make sense until you read the full text. I would remove.

Response: Thank you for this suggestion. We have removed this value from p. 3, line 7.

Comment 5: -The "Conclusions" section should go further than reiterating the association that was found, and instead discuss the implications of the association.

Response: Thank you for this insightful suggestion. Accordingly, we have avoided reiterating the results and instead specified their implications on p. 4, lines 13–15 as follows.

These results suggest that providing accurate knowledge regarding vaccination to PCPs may improve their administration and recommendation of HPVv, even in the absence of active government recommendations.

Comment 6: -Consider replacing one of the "Strengths and Limitations of this Study" bullet—perhaps the one describing the use of multivariable logistic regression—to say something more interesting about the implications of the work.

Response: Thank you for this suggestion. We have revised this section to avoid mentioning multivariable logistic regression as a strength of this study and added the following text on p. 5, lines 3–4.

This nationwide study targeted the physician members of the Japan Primary Care Association, which is the largest academic society for PCPs in Japan.

Comment 7: Introduction:-In the introduction, it would be helpful to have a bit more context about the "adverse event" issue for uninitiated readers.

Response: Thank you for this suggestion. Accordingly, we have added further details regarding the 'adverse events' on p. 6, lines 13–15.

However, the media widely reported concerns regarding the potential adverse effects of HPV vaccination among young girls, including complex regional pain syndrome, giving rise to social distrust and vaccine hesitancy related to HPVv.

Comment 7: Methods:-In the discussion of the questionnaire, is the list of measures complete? All relevant items should be described.

Response: Thank you for this suggestion. We have now added more items to complete the list on p.9, lines 5–12.

The questionnaire was conducted using an online tool, SurveyMonkey. The questionnaire was self-conducted and anonymous. It collected data on the participating physicians' attitudes regarding vaccines, including HPVv (administration or recommendation), through a vaccination quiz; information resources on vaccinations; and baseline characteristics, such as sex, career after graduation, main practice category, practice setting, provision of daily paediatric medical service, population size of the main working area as an administrative unit of the local government, experience as a kindergarten or school physician, and experience raising children (details below).

Comment 8: -As noted in my comment about the abstract, the main outcome should not be the association. The outcomes should be the provider behaviors assessed in the survey. So the primary outcome should be HPV vaccine administration, and the secondary outcome should be HPV vaccine recommendation. The authors should make this clearer and then describe their interest in the hypothesized associations.

Response: Thank you for this detailed suggestion. Accordingly, we have framed the outcomes as HPV vaccine administration (primary) and recommendation (secondary) on p. 9, line 15–p. 10, line 14.

Also, we have added new table (Table 2) to present the results of each outcome in further detail on p. 28.

The primary outcome of this study was the administration of HPVv for routine and voluntary vaccination. The PCPs were asked to respond with 'yes' or 'no' to the following question: 'Do you administer routine/voluntary human papillomavirus vaccine?' Then, we investigated the association between PCPs' knowledge of vaccination and vaccine administration after adjusting for possible confounders (described below).

The secondary outcome of this study was the recommendation of routine and voluntary HPV vaccination by PCPs. The respondents were asked, 'How do you recommend routine/voluntary vaccination for HPV?' The following response options were provided using a Likert-type scale: 'actively recommend', 'recommend occasionally', 'no opinion', 'do not actively recommend', and 'do not recommend'. The response 'actively recommend' was considered 'recommending behaviour', which is a more positive behaviour.⁽¹⁵⁾ Furthermore, the responses 'recommend occasionally', 'no opinion', 'do not actively recommend', and 'do not recommend' were considered 'non-recommending behaviour'. Then, we investigated the association between PCPs' knowledge of vaccination and vaccine recommendation after adjusting for possible confounders (described below).

Comment 9: --For the section on main factor, it would be clearer if they identified the vaccination quiz score as a predictor. Since the quiz is so important to the analysis, it would also be important to list all questions that were asked in the quiz. Perhaps including these 6 items in a table, figure, or bulleted/numbered list would work well.

Response: Thank you for this suggestion. We have now included all six quiz questions on p. 11, line 5–p. 12, line 5.

Vaccination quiz

Q1. A 12-year-old boy has no history of mumps vaccination according to the Maternal and Child Health Handbook. His mother states that he had developed mumps in his childhood. She mentions that he had visited a clinic with bilateral parotid gland swelling, and the doctor had suspected mumps based on clinical examination without blood tests. Is it then correct to recommend a mumps vaccine to the boy? (Correct answer: correct)

Q2. A 3-month pregnant woman requests an influenza vaccine, and the only available influenza vaccine in the hospital contains thimerosal. Is this vaccine acceptable or contraindicated for this patient? (Correct answer: acceptable)

Q3. Is the 23-valent pneumococcal vaccine, an inactivated vaccine, less likely to cause swelling when injected intramuscularly than when injected subcutaneously? (Correct answer: correct)

Q4. Is there a limit to the number of vaccines (including live vaccines) that can be concurrently administered? (Correct answer: there is no limit)

Q5. Is it correct that 'suspending proactive recommendation of HPV vaccination' means 'withholding local governments from sending individual pre-vaccination screening questionnaires for HPV vaccine and notices to each household and actively calling for HPV vaccination through various media rather than the suspension of routine vaccination'? (Correct answer: correct)

Q6. Is it correct that under the 'Adverse Event Following Immunisation reporting system', physicians are obligated to report to the Pharmaceuticals and Medical Devices Agency (PMDA) when a vaccinated individual begins exhibiting certain symptoms? (Correct answer: correct)

Comment 10: -Also for the main factor: Why did the authors choose to turn the vaccination quiz score into a binary variable? Why not treat this as a continuous or count variable if it is a score? The authors should consider this, and if they keep it, provide justification for this decision.

Response: Thank you for addressing these practical considerations. We are honored that you consider the results of the vaccination quiz potentially predictive of HPV vaccination. However, the purpose of our study was not to develop a predictive model. Unfortunately, we did not prepare a cohort to validate the predictive model that we developed.

The purpose of our study was to hypothesize and verify if a high level of knowledge regarding vaccines is associated with HPV vaccine administration or recommendations to increase the rates of HPV vaccination, which can prevent cervical cancer.

On the other hand, we are also extremely interested in identifying the extent to which the odds of administering or recommending HPV vaccine increase with each 1-point increase in knowledge, using a model with the primary factor as a continuous variable, as the reviewer has pointed out. We have therefore analyzed the results using the model as you have indicated, and the results are described below.

Since the vaccination quiz comprised only one question on the HPV vaccine, we do not expect the vaccination quiz we have prepared to be accurate enough to develop a predictive model as the reviewer suggests.

In fact, the area under the receiver operating characteristic curve was 0.71 for the model with knowledge quiz points as a binary variable and 0.72 for the model with the quiz points as a continuous variable on performing multivariate analysis. Using univariate analysis, the value was 0.61 for the model with the quiz points as a binary variable and 0.65 for the model with the quiz points as a continuous variable. Unfortunately, these results indicate that the predictive model with the vaccination quiz had no particular predictive ability.

However, despite these results, if the reviewer finds it preferable to consider the independent variable, knowledge, as a continuous variable, please let us know; considering the significance of a predictive model, we would revise our Methods accordingly.

Comment 11:-Consider language when listing "possible confounders." More simply, these could be identified as other factors included in analyses.

Response: Thank you for this suggestion. We revised the term "possible confounding factors" into "other factors" on p. 12, line 7.

Other factors

Comment 12: Results:-It would be helpful to have more description somewhere earlier in the paper about the distinction between routine and voluntary HPV vaccination in Japan. Perhaps I missed it, but I found myself getting a bit lost in the results because of a lack of clarity around this topic.

Response: Thank you for raising this point. In keeping with the reviewer's suggestion, we have now revised the Introduction to differentiate routine and voluntary HPV vaccination in Japan on p. 6, lines 9–13.

In April 2013, free-of-charge HPV vaccination of 12 to 16-year-old girls was initiated as part of the routine vaccination program.(3, 7, 8) On the other hand, three doses of voluntary bivalent HPVv for ≥ 10 -year-old females and quadrivalent HPVv for ≥ 9 -year-old females cost approximately ¥45,000 (US \$450, as of April 2013).

Comment 13: -Is there any way to understand the overlap between those who administered the vaccine and those who recommended the vaccine? It seems like those two behaviors may themselves be linked.

Response: Thank you for this comment. To clarify the relationship between those who administered and those who recommended the vaccine, we have calculated and specified the correlation coefficient between them on p. 17, lines 7–8.

The correlation coefficient between vaccine administration and recommendation for routine and voluntary HPV vaccination was 0.17 and 0.23, respectively.

Comment 14: Conclusion:-I think it may be worth spending some time revising the conclusion, because as written, it felt like it was largely restating the findings from the results and summarizing findings from other related literature. It would help strengthen the article if there were a clearer discussion of the implications of the main findings, and if the authors were able to more succinctly link these findings to the other relevant research that is cited.

Response: Thank you for this detailed suggestion. We have now restructured this section and made additions to the Discussion to more clearly state the main findings (p. 18, line 1–p. 19, line 2). Vaccine hesitancy is a global health concern(13), and hesitancy for HPV vaccination has been reported in many countries, including Japan.(4-6) This is the first study to focus on the association between PCPs' knowledge of vaccination and their practice or attitude towards HPVv in the absence of proactive recommendations from the government of Japan. We found positive associations between accurate vaccination knowledge among PCPs and the administration or recommendation of HPVv under routine and voluntary vaccination. In addition, the sensitivity analysis showed that physicians with accurate knowledge of HPV vaccination were likely to recommend HPVv. A systematic review published in 2021 examined the perceptions, knowledge, and recommendations of healthcare providers regarding vaccines. It showed that the patient recommendations of healthcare providers were positively associated with their knowledge and experience, beliefs about disease risk, and perceptions of vaccine safety, necessity, and efficacy.(29) The present results are consistent with these findings.(29) In Lebanon, where HPVv is not included in the national routine vaccination schedule as of 2017, physicians practicing in obstetrics and gynaecology, paediatrics, family medicine, and infectious diseases with greater knowledge regarding HPV and HPVv recommend HPVv more often than physicians with less knowledge (AOR 3.4).(30) Further, in the United States, higher rates of completion of three HPVv doses (IRR 1.28) were observed among the patients of primary care clinicians, including family medicine physicians, paediatricians, and family and paediatric nurse-practitioners, with greater knowledge regarding HPV and HPVv (31). Our results also support these findings. Another study investigating the association between PCPs' knowledge of vaccination

and the administration or recommendation of voluntary mumps vaccination for adults showed the same positive associations.(32)

Comment 15; -In the first paragraph of this section, I also found some of the comparisons to data from earlier findings confusing. It would help if the writing in this section were a bit shorter and clearer. I was also confused by the distinction between PCP and pediatrics/others, since some pediatricians are PCPs. Can the authors clarify this?

Response: Thank you for this suggestion. We have now removed some parts of this section and revised the text further for conciseness (p. 19, lines 5–10).

As of 2019, the proportion of PCPs who administered or actively recommended the HPVv for routine vaccination (23.3% and 41.6%, respectively) was the lowest compared with other routine vaccines (39.5–95.5% and 74.5–92.0%, respectively) in Japan.(35) Compared to that in our previous study from 2012,(23) the proportion of PCPs recommending or administering HPVv was lower in the present study: the proportion of HPVv administration decreased from 58.3%(23) for voluntary vaccination only(24) to 23.3% for routine vaccination (Table 2) and 17.8% for voluntary vaccination. The proportion of PCPs recommending HPVv decreased from 46.5%(23)for voluntary vaccination only(24) to 41.6% for routine vaccination (Table 2) and 22.0% for voluntary vaccination.

In the Methods section (p. 8, lines 10–11), we have included the following sentence:

Most JPCA physicians were internists working as PCPs at clinics or hospitals.

Further, the text on p. 7, lines 11–13, differentiates PCPs from paediatricians:

In Japan, the HPVv is administered not only by paediatricians, obstetricians, and gynaecologists (OBGYNs), but also by primary care physicians (PCPs).(23, 24)

Comment 16;-Make the “take-home message” in the last conclusion paragraph stronger, this will really help tie together the whole section (see comments above).

Response: Thank you for this suggestion. We have added the following sentence to the Conclusions section (p. 25, lines 6–7).

Our results suggest that providing more knowledge about vaccination to PCPs may increase their likelihood to administer or recommend the HPVv, thereby improving vaccination rates.

Comment 17;Tables and Figures:

-In Table 1, the 2 columns are very confusing. I would eliminate the column that includes responders (n=1084) and only include the column on participants in the analysis (n=981). This would make the table much clearer.

Response: Thank you for this suggestion. In accordance with it, we have eliminated the column on responders (p. 27).

Comment 18;-There are quite a lot of tables listing the associated factors. Is there any way to consolidate these tables, such that there are 2 rather than 4 tables? E.g., bundling the tables on recommendation and administration, or the tables on routine and voluntary, etc.

Response: Thank you for this suggestion. We have now combined two tables into one on administration and recommendation. The original Tables 2 and 3 have been combined into the

Supplementary Table 1, and the original Tables 4 and 5 have been merged into the Supplementary Table 2.

Comment 19;--The flow chart on the number of JPCA members and the number of participants in the study seems unnecessary since this is already described in the text.

Response: Thank you for this comment. Accordingly, we have excluded the number of JPCA members but retained the number of participants to clarify the response and participation rate.

We sincerely thank the Reviewer again for the valuable comments.

VERSION 2 – REVIEW

| | |
|------------------------|--|
| REVIEWER | Kahn, Benjamin University of North Carolina Research Opportunities Initiative, Health Behavior |
| REVIEW RETURNED | 17-Sep-2023 |

| | |
|-------------------------|--|
| GENERAL COMMENTS | <p>Discussion, page 20, lines 1-10: I think part of this is supposed to be related to voluntary vaccination, but both sentences seem to refer to routine vaccination.</p> <p>Methods, pages 10-11, lines 14-19 and 1-14: This is for the section on the Main Outcome. The authors describe the primary outcome as HPV vaccine administration and the secondary outcome as HPV vaccine recommendation, but it seems like there are really 4 outcomes: HPV vaccine routine administration, HPV vaccine voluntary administration, HPV vaccine routine recommendation, and HPV vaccine voluntary recommendation. I find the framing confusing as currently written. If routine and voluntary are being assessed separately, this should be described more clearly. Based on Supplementary Tables 1-2, it seems like the analyses on routine and voluntary were done separately since there are two rows for each category. I think there can still be two Supplementary Tables (one each for Administration and Recommendation), but the distinction between routine and voluntary needs to be clearer. There could be completely separate sections for each in the tables (for example, list everything for routine first, then list everything for voluntary). I found the current format very confusing.</p> <p>Supplementary Tables 1-2: Refer to comment above. I don't think this would change any of the results, just the presentation of the information.</p> |
|-------------------------|--|

VERSION 2 – AUTHOR RESPONSE

Reviewer: 2

Dr. Benjamin Kahn, University of North Carolina Research Opportunities Initiative

Comments to the Author:

Comment 1: Discussion, page 20, lines 1-10: I think part of this is supposed to be related to voluntary vaccination, but both sentences seem to refer to routine vaccination.

Response 1: We wish to express our appreciation to Reviewer 2 for these insightful comments. They helped us to considerably improve our manuscript.

We have added information about voluntary vaccination as follows on p.19, lines 1-4.

Compared to that in our previous study from 2012,(23) the proportion of PCPs administering or recommending HPVv was lower in the present study: the proportion of HPVv administration decreased from 58.3% for voluntary vaccination alone(23) to 23.3% for routine vaccination and 17.8% for voluntary vaccination (Table 2). The proportion of PCPs recommending HPVv decreased from 46.5% for voluntary vaccination alone(23) to 41.6% for routine vaccination and 22.0% for voluntary vaccination(Table 2).

Comment 2: Methods, pages 10-11, lines 14-19 and 1-14: This is for the section on the Main Outcome. The authors describe the primary outcome as HPV vaccine administration and the secondary outcome as HPV vaccine recommendation, but it seems like there are really 4 outcomes: HPV vaccine routine administration, HPV vaccine voluntary administration, HPV vaccine routine recommendation, and HPV vaccine voluntary recommendation. I find the framing confusing as currently written. If routine and voluntary are being assessed separately, this should be described more clearly.

Response2: Thank you for the suggestion. Accordingly, we have described more clearly the primary outcomes as the administration of HPV vaccine for routine vaccination and voluntary vaccination and the secondary outcomes as the recommendation of HPV vaccine for routine and voluntary vaccination, respectively on p.9, lines 15-16, 18-19 and on p.10, lines 1, 9.

The primary outcomes of this study were the administration of HPVv for routine and voluntary vaccination, respectively.

Then, we investigated the association between PCPs' knowledge of vaccination and vaccine administration for each routine and voluntary vaccination, after adjusting for potential confounders (described below).

The secondary outcomes of this study were the recommendation of routine and voluntary HPV vaccination by PCPs.

Then, we investigated the association between PCPs' knowledge of vaccination and vaccine recommendation for routine and voluntary vaccination after adjusting for possible confounders (described below).

Comment 3: Based on Supplementary Tables 1-2, it seems like the analyses on routine and voluntary were done separately since there are two rows for each category. I think there can still be two Supplementary Tables (one each for Administration and Recommendation), but the distinction between routine and voluntary needs to be clearer. There could be completely separate sections for each in the tables (for example, list everything for routine first, then list everything for voluntary). I found the current format very confusing.

Supplementary Tables 1-2: Refer to comment above. I don't think this would change any of the results, just the presentation of the information.

Response3: Thank you for this suggestion. Accordingly, we have separated sections for routine vaccination and voluntary vaccination for each HPV vaccine administration (supplementary table 1-1, 1-2) and HPV vaccine recommendation (supplementary table 2-1, 2-2).

We sincerely thank the Reviewer again for the valuable comments.