PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Identifying and de-implementing low-value care in primary care: the GP's perspective. A cross-sectional survey
AUTHORS	Kool, Rudolf Bertijn; Verkerk, Eva; Winnemuller, Lieke J.A; Wiersma, Tjerk; Westert, Gert P; Burgers, JS; van Dulmen, SA

VERSION 1 – REVIEW

REVIEWER	Katharine Wallis the University of Queensland Australia
REVIEW RETURNED	10-Feb-2020

GENERAL COMMENTS	This paper addresses an important topic and I was looking forward to the promised ideas for how to help GPs. However, the paper does not introduce much new knowledge - suggestions for more education and more time are not new and not likely to be successful solutions. Also I question whether a survey is the best approach to "explore the experiences of" and "specify their needs". In depth interviews are generally better for exploring experiences. "Specify their needs" is not the best use of English to express what you are wanting to say here. Why do you use "he" when talking about GPs? It appears that more than 50% GPs are female. The most interesting aspect of the paper, the "Needs of" GPs, is given only a small section at the end of the results section. New information is introduced in the Discussion section, some of this should be moved to the results section. For example, information about variation, feedback, health insurance, and communication. Further information about the website would be interesting - what do you mean here? Is it all the same website you refer to? That is, of the Dutch college? This could be interesting and novel and deserves more discussion. What are the suggested improvements to "health care policy and their organization of care"? This could be interesting and provide new insights for change. I think the BMJ Open would prefer "organisation". More discussion would be interesting regarding the malpractice risk too and perceptions thereof, perhaps how your findings differ from those in the US and how the malpractice risk is the same or different.

REVIEWER	Susann Hueber Institute of General Practicem, Universitätsklinikum Erlangen, Germany
REVIEW RETURNED	18-Feb-2020

GENERAL COMMENTS	Dear Dr Sucksmith, dear authors, I would like to thank you for asking me to review the manuscript entitled “How can we help general practitioners to reduce low-value care? A survey study.” The study addresses the very important topic of medical overuse in primary care. It is also quite important to know GPs’ point of view. Nonetheless, I do have some recommendation how to improve the quality of the analysis. Please find all my comments in the document attached. If you do have any questions do not hesitate to ask. Sincerely Susann Hueber Manuscript Review Manuscript: How can we help general practitioners to reduce low-value care? A survey study Overall impression: The study addresses the important topic of how GPs perceive the provision of low value care and how to tackle these challenges. A cross-sectional survey with Dutch GPs was conducted. The questionnaire contained closed and open-ended questions as well as two case vignettes. The authors aim to identify drivers in the provision of low value care and describe possible solutions. The abstract summarizes the study. As will be described below, I will suggest modifications regarding the aim of the study and the analysis. This information should then be added to the abstract. The title implies that the study will provide strong recommendations how to prevent medical overuse. But in my view, these results primarily show GPs’ point of view. I would recommend using a less suggestive title as for example: “Identifying and De-implementing low value care in primary care – what GPs think. A cross-sectional survey“. Introduction: • Study question: Authors wrote: “The aim of this study was to explore the experiences of Dutch GPs towards low-value care and to specify their needs to decrease low-value primary care.”. In my opinion, the term “explore experiences” suggests gathering a deep and elaborate understanding of GPs experiences with low value care. Despite using open-ended questions I would rather suggest to use terms that describe the aims of a quantitative study. Methodology • Page 4, line 49 to 54: If necessary, the Dutch health care system should be described in the Introduction. • Page 4, line 54 and subsequent lines: Questionnaire: Authors should describe why a definition of low value care was not provided. In my opinion, providing a definition would

	have been better than giving an example of low value care (see my comments beolow). • Further comments on the questionnaire: (1) part 1, question 2: The authors should provide a reason, why “antibiotics for upper respiratory infections” was mentioned? In my view, a risk of bias regarding the answers is given (availability bias); and (2) part 2, question 1 and 3 (both cases): As a denominator is not reported, the absolute number can hardly be 2 interpreted. A denominator could be the number of patients with unspecific low back pain seen in the last two weeks. Authors should provide a reason why they did not ask for a denominator. • Method of pre-test should be described in detail. • Concerns regarding the reasons for the study design chosen: Authors should comment on social desirability (e.g. Part 2, question 2: “I do not agree with the recommendation” or “I was not aware of the recommendation.”). • Authors should describe whether the position of items was randomly assigned. Analysis: • A reference is missing when describing the demographic characteristics of all Dutch GPs. • Description of analysis of open ended questions is not provided. Which method was used? • Part 1, question 2: Not everything named as an example for low value care is actually low value care (see also table 2). Authors should comment on how the answers were analyzed (e.g. experts’ review, by comparing the named practices with Choosing Wisely lists). Authors should also describe how answers have been evaluated and interpreted that cannot be assigned clearly as low value care, e.g. referrals. • I would recommend to analyze differences between groups differing in demographic characteristics as age, gender or time in practice and also to analyze whether or not there are differences between GPs varying in attitudes towards low value care (as for example part 1, question 1: GPs whom have never or sometimes delivered low value care vs. GPs whom have delivered frequently or often low value care or part 1, question 4: observed negative consequences vs. not-observed negative consequences etc.) or differing in the provision of low value care (part 2, question 1: high vs. low provider) • Part 2, question 1 (both cases): I recommend reporting the distribution of the frequencies (mean, standard deviation, median). Results: • Subgroup analysis as described above should be added. All percentages should be rounded (67% instead of 66.5%). • Page 6, line 20: this should be mentioned in the analysis section.

	• Page 6, table 2: As it is not described how open ended questions have been analyzed, it is difficult to interpret the results. As the authors stated that the aim of the study is to specify GPs needs I would suggest also specifying the provided low value care in more detail (e.g. medication: which drugs have been mentioned). Getting more information where GPs see specific areas of overuse in their own area could also help to develop 3 specific solutions. I do not understand why “referrals”, “administrational tasks”, “extra consultation” are labelled as “low value care”? Authors should comment on the analysis as described above. Some of the most frequently mentioned low value care practices were also part of the questionnaire: “antibiotics” was mentioned in part 1, question 2 and “Vitamin B12” and “X-ray” were the presented as cases. The authors should mention this as a limitation of their study (availability bias / heuristic). • Page 7, table 3: Terms in the table should be the same as the terms in the questionnaire to make it more convenient for the reader. Some of the terms in the questionnaire are not mentioned in the table – why? As the aim of the study is to “help GPs to reduce low-value care”, I would suggest to put more emphasis on specifying the “other reasons” that the GPs had given. • Cases: As described above, it is difficult to interpret the absolute numbers because a denominator was not reported (refers to question 1 and 3 of both cases). For the same reasons as described above answers to question five (both cases) should be reported in more detail. • Needs of GPs to reduce low value care: Reporting those results as a continuous text makes it difficult to read. I would suggest creating a table to improve comprehensibility. Also, as stated above, this part of the result section is difficult to interpret as the analysis is not specified. I would also suggest using relative values instead of absolute values. • I would recommend (1) to delete the sentence in page 6 line 18/19 (“Many GPs…”) as the topic “GPs action to reduce overuse” is described in another part of the result section. Discussion • Summary of the study: Authors should be more cautious when describing what the results of their study suggest. E.g. “Our survey showed that low-value care is regularly provided in Dutch general practice” (Line 31). In my opinion, the study only reveals GPs view but does not provide information about the amount of low value care in reality. Also, I would recommend not using “are motivated to reduce” (Line 34).

	• Limitations: Information should be added that some of the most frequently mentioned low value care practices were also part of the questionnaire (availability bias). If item order was not randomized this information should be added as a limitation of the study. 4 STROBE checklist: • Authors should comment on and provide more information on: • Title and abstract – Item 1, b “what was found” • Variables – Item 7 – Define Outcomes • Other sections may have to be revised, see my recommendations above.

VERSION 1 – AUTHOR RESPONSE

Reviewers' Comments to Author:

Reviewer: 1
Reviewer Name: Katharine Wallis
Institution and Country: the University of Queensland, Australia
Please state any competing interests or state ‘None declared’: None declared

This paper addresses an important topic and I was looking forward to the promised ideas for how to help GPs. However, the paper does not introduce much new knowledge - suggestions for more education and more time are not new and not likely to be successful solutions. Response: We agree that the suggestions of more time and education are not new. We already have mentioned this in our introduction. However, with this paper we want to identify the ‘how’ to reduce low-value-care, knowing ‘what’ should be done. We think by focusing on the answers in the open questions, we can make some suggestions for tackling the challenge of overuse in primary care (e.g. information campaigns for the public or training of communication skills). And although some of our suggestions are not totally new, it is important to conclude that, apparently, many GPs really think that this is the way to go forward in reducing low-value care.
We also agree that education alone might not be sufficient to reduce low-value care and to change behavior. However, education is a broad concept and we think it is important to specify which education is needed e.g. clear guidelines for GPs, professional education for physical therapists and information campaigns for the public.

Also I question whether a survey is the best approach to "explore the experiences of" and "specify their needs". In depth interviews are generally better for exploring experiences.
Response We agree that in-depth interviews would be an interesting next step in order to better specify how low-value care can be reduced. The open questions of this survey can be seen as a forst step. We are now planning, based on the results of this survey, in depth interviews for some specific topics with GPs as well as patients.

"Specify their needs" is not the best use of English to express what you are wanting to say here.
Response: We agree that we might better use the wording ‘identify their needs’ and changed it throughout the document.

Why do you use "he" when talking about GPs? It appears that more than 50% GPs are female. Response: Indeed, most of the Dutch GPs are female so we changed ‘he’ in ‘she’ and mentioned in the beginning that wherever it says ‘she’ we mean ‘she/he’.

The most interesting aspect of the paper, the "Needs of" GPs, is given only a small section at the end of the results section. New information is introduced in the Discussion section, some of this should be moved to the results section. For example, information about variation, feedback, health insurance, and communication.
Response:
We agree that the needs of the GPs are the most interesting part of our paper. Also on request of the other reviewer, we added table 5 which includes the categorized answers on the open questions regarding their needs. We made sure that the subjects discussed in the discussion section, such as feedback, health insurance, communication and the website, were also reported in the results section.

Further information about the website would be interesting - what do you mean here? Is it all the same website you refer to? That is, of the Dutch college? This could be interesting and novel and deserves more discussion.
Response: We agree that the success of this website might be an important opportunity to reduce low-value care. Several GPs mentioned this website as you can now see in table 5. We added also more details about the website in the discussion such as adding a decision aid on PSA screening.

What are the suggested improvements to "health care policy and their organization of care"? This could be interesting and provide new insights for change. I think the BMJ Open would prefer "organisation".
Response: Regarding the improvements to "health care policy and their organization of care" the GPs suggested to give them more time for the consultation, reformulate the national guidelines, put reminders in the ordering system, remove vitamin B12 tests from several order sets, and cancel specific vitamin B12 consultation hours. We agree that these are interesting suggestions and added these to the results section.

We changed all the US English spelled words to the UK spelling.
More discussion would be interesting regarding the malpractice riskgen too and perceptions thereof, perhaps how your findings differ from those in the US and how the malpractice risk is the same or different.Response: There are indeed interesting differences with other healthcare systems as we mention now in a paragraph in the Discussion in the section Comparison with existing literature.

Reviewer: 2
Reviewer Name: Susann Hueber
Institution and Country: Institute of General Practicem, Universitätsklinikum Erlangen, Germany
Please state any competing interests or state ‘None declared’: None declared

Dear Dr Sucksmith, dear authors,I would like to thank you for asking me to review the manuscript entitled “How can we help general practitioners to reduce low-value care? A survey study.” The study addresses the very important topic of medical overuse in primary care. It is also quite important to know GPs’ point of view. Nonetheless, I do have some recommendation how to improve the quality of the analysis. Please find all my comments in the document attached. If you do have any questions do not hesitate to ask.Sincerely Susann Hueber

1
Manuscript Review
Manuscript: How can we help general practitioners to reduce low-value
care? A survey study
Overall impression: The study addresses the important topic of how GPs perceive the provision of low value care and how to tackle these challenges. A cross-sectional survey with Dutch GPs was

conducted. The questionnaire contained closed and open-ended questions as well as two case vignettes. The authors aim to identify drivers in the provision of low value care and describe possible solutions. The abstract summarizes the study. As will be described below, I will suggest modifications regarding the aim of the study and the analysis. This information should then be added to the abstract.
Response: We modified the abstract based on the comments of the reviewer, discussed below.

The title implies that the study will provide strong recommendations how to prevent medical overuse. But in my view, these results primarily show GPs' point of view. I would recommend using a less suggestive title as for example: "Identifying and De-implementing low value care in primary care – what GPs think. A cross-sectional survey".
Response: We think that this is a very good suggestion and changed the title in: Identifying and de-implementing low value care in primary care: the GP's perspective. A cross-sectional survey.

Introduction:
• Study question: Authors wrote: "The aim of this study was to explore the experiences of Dutch GPs towards low-value care and to specify their needs to decrease low-value primary care.". In my opinion, the term "explore experiences" suggests gathering a deep and elaborate understanding of GPs experiences with low value care. Despite using open-ended questions I would rather suggest to use terms that describe the aims of a quantitative study.
Response: Although we focused on the open questions, we agree with the reviewer that we better use another word than 'explore'. Throughout the paper, we use now 'identify' instead of 'explore' and 'specify'.

Methodology
• Page 4, line 49 to 54: If necessary, the Dutch health care system should be described in the Introduction.
Response: In the Methods section, first paragraph (Design and setting) we mention some relevant aspects of the Dutch healthcare system.

• Page 4, line 54 and subsequent lines: Questionnaire: Authors should describe why a definition of low value care was not provided. In my opinion, providing a definition would have been better than giving an example of low value care (see my comments beolow).
Response: We did provide a definition of low-value care in the letter with which we invited the GPs to participate. We added this to the paragraph Questionnaire and now mention the definition over there.

• Further comments on the questionnaire: (1) part 1, question 2: The authors should provide a reason, why "antibiotics for upper respiratory infections" was mentioned? In my view, a risk of bias regarding the answers is given (availability bias);
Response: We agree with the reviewer that mentioning examples of low-value care such "antibiotics for upper respiratory infections" might have introduced availability bias. Therefore, we mentioned this in the section about the weaknesses of the study.

and (2) part 2, question 1 and 3 (both cases): As a denominator is not reported, the absolute number can hardly be 2 interpreted. A denominator could be the number of patients with unspecific low back pain seen in the last two weeks. Authors should provide a reason why they did not ask for a denominator.
Response: We did not ask about the number of patients with low back pain because we did not think that was relevant to answer our research question. We wanted to keep the burden of the study low for GPs and asking how many patients they had seen the last two weeks with low back pain, might have complicated their answers and therefore introduce a source of (partial) non-response. The number of requests for an x-ray and vitamin B12 tests from patients, and the number of prescriptions for an x-ray

and vitamin B12 test are more easily remembered. In addition, for case 2 regarding the vitamin B12 tests, it is hard to define the denominator.

• Method of pre-test should be described in detail.
Response:
We describe the testing of the questionnaire now in more detail in the Questionnaire paragraph of the Methods section.

• Concerns regarding the reasons for the study design chosen: Authors should comment on social desirability (e.g. Part 2, question 2: “I do not agree with the recommendation” or “I was not aware of the recommendation.”).
Response: As mentioned in the Strengths and weaknesses section in the Discussion, we asked GPs how much low-value care was provided in general and not specifically in their own practice, except for the two cases. So, we tried to reduce social desirable questions. We also emphasized in the letter that the survey was anonymous and therefore expect to have minimized social desirable answers.

• Authors should describe whether the position of items was randomly assigned.
Response:
We added in the Questionnaire paragraph of the Methods section that the position of the items was randomly assigned.

Analysis:
• A reference is missing when describing the demographic characteristics of all Dutch GPs.
In table
Response: We added reference 20 to the text preceding this table. BMJ Open does not allow references in the table.

• Description of analysis of open ended questions is not provided. Which method was used?
Response: We agree that this part of the analysis was missing and therefore added the following paragraph to the Analysis paragraph in the Methods section.
“One author (EWV) read all the texts of the open questions and categorized them. Another researcher (RBK) also read all the texts and checked the categorization. When he disagreed, the two authors discussed until consensus was reached.”

• Part 1, question 2: Not everything named as an example for low value care is actually low value care (see also table 2). Authors should comment on how the answers were analyzed (e.g. experts’ review, by comparing the named practices with Choosing Wisely lists). Authors should also describe how answers have been evaluated and interpreted that cannot be assigned clearly as low value care, e.g. referrals.
Response: An important aspect was to identify what GPs think is low-value care. Therefore, we did not interpret the giving answers and just reported them. Many of the answers are of low-value and part of the Choosing Wisely lists or mentioned as a do-not-do recommendation in the GP guidelines. For example, referrals are mentioned several times in the lists and guidelines as potential low-value depending on the specific situation. Other answers contain not enough details to determine whether they are of low-value according to the guidelines. We do agree that the administrative tasks that GPs reported would not fall under the definition of low-value care according to us. However, this is the perception of the GPs and thereby an outcome of our study. So, we do not think we should analyse and mention whether they are of low-value or not.

• I would recommend to analyze differences between groups differing in demographic characteristics as age, gender or time in practice and also to analyze whether or not there are differences between GPs varying in attitudes towards low value care (as for example part 1, question 1: GPs whom have

never or sometimes delivered low value care vs. GPs whom have delivered frequently or often low value care or part 1, question 4: observed negative consequences vs. not-observed negative consequences etc.) or differing in the provision of low value care (part 2, question 1: high vs. low provider)
Response: We agree that some subgroup analyses are interesting to report. We analysed the relations between demographic characteristics and several closed questions using chi-square tests, Fischer's exact tests and spearman correlation coefficients. These analyses were added to the Methods and Results sections.

• Part 2, question 1 (both cases): I recommend reporting the distribution of the frequencies (mean, standard deviation, median).
Response: We agree that the distribution of these cases should be reported. Their median and interquartile range are added to the results.

Results:
• Subgroup analysis as described above should be added. All percentages should be rounded (67% instead of 66.5%).
Response: As described above, the results of the analyses are added. The latest papers published in BMJ open present percentages rounded to one decimal place, so 66.5%. That's why we present our results in this way too. If the editor wants us to round them, of course we will do.

• Page 6, line 20: this should be mentioned in the analysis section.
Response: We have moved this sentence to the Analysis section

• Page 6, table 2: As it is not described how open ended questions have been analyzed, it is difficult to interpret the results. As the authors stated that the aim of the study is to specify GPs needs I would suggest also specifying the provided low value care in more detail (e.g. medication: which drugs have been mentioned). Getting more information where GPs see specific areas of overuse in their own area could also help to develop specific solutions.
Response: We agree that we could give more information about the answers on the open questions and added the following text to the manuscript: "Within the category medication, antibiotics for respiratory tract infections was by far the most frequent, but also benzodiazepines, opioids, and vitamin supplements were mentioned several times. Low-value laboratory tests were often not specified, but when it was specified, vitamin and PSA tests were the most frequent. GPs wrote down a variety of 19 types of referrals that are often of low-value, of which referrals to the physical therapist were most frequent. Regarding imaging, lumbosacral x-rays and x-rays of a joint in case of osteoarthritis were the most frequent. Several GPs reported administrative tasks, such as filling in forms or phone calls to arrange for example home care devices. Other care practices were other diagnostic tests such as an echocardiography for chest pain, and procedures such as minor cosmetic surgery."

I do not understand why "referrals", "administrational tasks", "extra consultation" are labelled as "low value care"? Authors should comment on the analysis as described above.
Response: See answer above: Referrals can be of low-value as well as extra consultations, both mentioned in several Choosing Wisely lists. Administrative tasks may be considered as a different category however perceived by some GPs as low-value. An important aspect was to identify what GPs perceive as low-value care. Therefore, we did not interpret the giving answers and just reported them.

Some of the most frequently mentioned low value care practices were also part of the questionnaire: "antibiotics" was mentioned in part 1, question 2 and "Vitamin B12" and "X-ray" were the presented as cases. The authors should mention this as a limitation of their study (availability bias / heuristic).

Response: We agree and added potential availability bias as one of the weaknesses of this study.

• Page 7, table 3: Terms in the table should be the same as the terms in the questionnaire to make it more convenient for the reader.
Response: We agree that the terms should be the same and therefore adapted table 3.

Some of the terms in the questionnaire are not mentioned in the table – why?
Response: All of the terms of question 3 of part 1, in which we ask for reasons to provide low-value care in general, are mentioned in the table. In part 2, we asked for each case specifically what reasons the GP had for prescribing an x-ray or vitamin B12 test. We decided to present only the results of the question in part 1 (regarding low-value care in general), because we thought this is more interesting to an international audience.

We did add one new category to the table, compared to the questionnaire. The majority of the GPs that answered 'other' wrote down that they were driven by the patients' request. To clarify the results, we removed these answers from the 'other' category and put them in a separate category called 'request of the patient'.

As the aim of the study is to "help GPs to reduce low-value care", I would suggest to put more emphasis on specifying the "other reasons" that the GPs had given.
Response: We already mentioned some 'other reasons' in the manuscript and added more detailed information.

• Cases: As described above, it is difficult to interpret the absolute numbers because a denominator was not reported (refers to question 1 and 3 of both cases). For the same reasons as described above answers to question five (both cases) should be reported in more detail.
Response: As mentioned above, we added table 5 in order to report the needs of the GPs in more detail

• Needs of GPs to reduce low value care: Reporting those results as a continuous text makes it difficult to read. I would suggest creating a table to improve comprehensibility. Also, as stated above, this part of the result section is difficult to interpret as the analysis is not specified. I would also suggest using relative values instead of absolute values.
Response: We added table 5 to give the readers more overview on the different needs of the GPs and divided it in the two cases.

• I would recommend (1) to delete the sentence in page 6 line 18/19 ("Many GPs…") as the topic "GPs action to reduce overuse" is described in another part of the result section.
Response: We deleted the sentence

Discussion
• Summary of the study: Authors should be more cautious when describing what the results of their study suggest. E.g. "Our survey showed that low-value care is regularly provided in Dutch general practice" (Line 31). In my opinion, the study only reveals GPs view but does not provide information about the amount of low value care in reality. Also, I would recommend not using "are motivated to reduce" (Line 34).
Response: We agree that these conclusions do not result from the preceding text and reformulated the first one in: "Our survey showed that Dutch GPs indicate that they provide low-value care regularly." and removed the second one.

• Limitations: Information should be added that some of the most frequently mentioned low value care

practices were also part of the questionnaire (availability bias). If item order was not randomized this information should be added as a limitation of the study.
Response: We added this to the limitations of this study.

4
STROBE checklist:
• Authors should comment on and provide more information on:
• Title and abstract – Item 1, b "what was found"
• Variables – Item 7 – Define Outcomes
• Other sections may have to be revised, see my recommendations above.
Response: We added more information for these items

VERSION 2 – REVIEW

REVIEWER	Susann Hueber Institute of General Practice, Universitätsklinikum Erlangen, Germany
REVIEW RETURNED	06-Apr-2020

GENERAL COMMENTS	Dear Authors, Thank you for the revised version of your manuscript. I suggest only minor revisions: Page 6, Section Analysis: The order of steps described in this section should correspond to the result section. Therefore, "Differences between the study population and all Dutch GPs were analysed using the chi-square test." should be the first sentence. Page 6 / Line 33: "Relations between respondents' characteristics and their responses on several closed questions were tested using the chi-square test." Which respondents' characteristics have been analysed? The term "several closed questions" did not provide sufficient information. Please specify your analysis. Page 7, section Experiences with low value care, line 42 and the following. Except here, in each paragraph of the result section, numbers were provided. Please report your results consistently. Section: "Drivers for providing low value care" and "GPs action already done to reduce overuse": Please report on differences regarding respondents' characteristics. Page 8, section: "Drivers for providing low value care", line 25: "I will now order…" is this a verbatim? If so, please identify this as a citation. Page 9, line 5 "The number of requests for an x-ray by patients in the past 2 weeks was significantly related to the number of x-ray ordered by GPs in the past 2 weeks (Spearman rs=0.432, P<0.001)" and line 29 "The number of requests for a vitamin B12 test by patients in the past 2 weeks was significantly related to the number of tests ordered by GPs in the past 2 weeks (Spearman rs=0.610 P<0.001)." I do not understand the motivation behind this analysis. Please explain this in the analysis section. Page 9, line 4, please introduce the abbreviation IQR. Page 9, line 23 and 29: Please control for the correct use of "," and "." Discussion The fact that provision of low value care and attitudes towards low value care did not differ between GPs of different age and gender should mention in the Discussion.

	Please discuss that GPs mentioned practices as low value care that are not defined as low value care (as described in my first review). The following question arises that should be discussed further: What do GPs understand when we talk about medical overuse? GPs provide several reasons for the provision of low value care. But it seems that reasons have been attributed mainly to "external factors" such as time constraints and patients. Still pending is a self-reflective discussion inside the physicians' community. I would recommend mentioning this in the implication section. STROBE Item No 7:"The first part contained general questions about the the provision of low-value care" – delete double word Item No 9: Please add "availability bias" as described under "strengths and limitations" Item No. 12: Please describe only methods, not results.

VERSION 2 – AUTHOR RESPONSE

Reviewer: 2
Reviewer Name: Susann Hueber
Institution and Country: Institute of General Practice, Universitätsklinikum Erlangen, Germany
Please state any competing interests or state 'None declared': None declared

Dear Authors,

Thank you for the revised version of your manuscript. I suggest only minor revisions:
Page 6, Section Analysis: The order of steps described in this section should correspond to the result section. Therefore, "Differences between the study population and all Dutch GPs were analysed using the chi-square test." should be the first sentence.
Response: We agree that that should be the first sentence and changed the order of the sentences.

Page 6 / Line 33: "Relations between respondents' characteristics and their responses on several closed questions were tested using the chi-square test." Which respondents' characteristics have been analysed? The term "several closed questions" did not provide sufficient information. Please specify your analysis.
Response: The respondents' characteristics that we tested were: Gender, age, and practice setting as presented in table 1. The closed questions that were analysed were questions 1, 4 and 6 of part 1 of the questionnaire, and questions 1 and 3 of both the cases. We added some sentences in the Analysis section to mention this.

Page 7, section Experiences with low value care, line 42 and the following. Except here, in each paragraph of the result section, numbers were provided. Please report your results consistently.
Response: We agree that we should be consistent in reporting our results and therefore added numbers and percentages to this section.

Section: "Drivers for providing low value care" and "GPs action already done to reduce overuse": Please report on differences regarding respondents' characteristics.
Response: We report the analysis that showed no relation between respondents' characteristics and whether the GP was actively reducing low-value care. Regarding the drivers for providing low-value care, we analysed the relation between the respondents' gender, age and practice setting and whether they marked each of the 11 drivers as an important reason for providing low-value care. Chi-square tests and Fisher's exact tests showed no significant relations between these characteristics

and any of the drivers, after Bonferroni correction for multiple testing. For readability reasons, we did not describe all these p-values in the manuscript.

Page 8, section: “Drivers for providing low value care”, line 25: “I will now order…” is this a verbatim? If so, please identify this as a citation.
Response: This is indeed a verbatim and because we do not use citations in this manuscript, we removed it; the explanation in our manuscript (finding a compromise with the patient) is sufficient.

Page 9, line 5 “The number of requests for an x-ray by patients in the past 2 weeks was significantly related to the number of x-ray ordered by GPs in the past 2 weeks (Spearman rs=0.432, P<0.001)” and line 29 “The number of requests for a vitamin B12 test by patients in the past 2 weeks was significantly related to the number of tests ordered by GPs in the past 2 weeks (Spearman rs=0.610 P<0.001).” I do not understand the motivation behind this analysis. Please explain this in the analysis section.
Response: We described in the analysis section our rationale for this analysis: ‘To determine whether GPs that receive more requests from patients deliver more of these care practices, we analysed the relations between the number of patient requests for an x-ray or vitamin B12 test and the number of these tests ordered by GPs using Spearman’s correlation coefficients.’

Page 9, line 4, please introduce the abbreviation IQR.
Response: We introduce this abbreviation as InterQuartileRange

Page 9, line 23 and 29: Please control for the correct use of “,” and “.”
Response: We checked for the correct use of “,” and “.” and changed it if necessary.

Discussion
The fact that provision of low value care and attitudes towards low value care did not differ between GPs of different age and gender should mention in the Discussion.
Response: We now mentioned this in the first paragraph of the discussion.

Please discuss that GPs mentioned practices as low value care that are not defined as low value care (as described in my first review). The following question arises that should be discussed further: What do GPs understand when we talk about medical overuse?
Response: This is a valid question that we did not yet address. We mention now in the Implication section that not all GPs have an idea of low-value care that suits our definition and that an internal debate might clarify their understanding.

GPs provide several reasons for the provision of low value care. But it seems that reasons have been attributed mainly to “external factors” such as time constraints and patients. Still pending is a self-reflective discussion inside the physicians’ community. I would recommend mentioning this in the implication section.
Response: We agree with the reviewer that most of the factors are ‘external;’ and have added in the Implication section some sentences about the need for a self-reflective debate in the GP profession on training of skills.

STROBE
Item No 7:”The first part contained general questions about the the provision of low-value care” – delete double word
Response: We deleted the double word

Item No 9: Please add “availability bias” as described under “strengths and limitations”
Response: We added “availability bias” to this item.

Item No. 12: Please describe only methods, not results.
Response: In item 12b we removed the results

VERSION 3 – REVIEW

REVIEWER	Susann Hueber Institute of General Practice, Universitätsklinikum Erlangen, Germany
REVIEW RETURNED	05-May-2020

GENERAL COMMENTS	Dear authors, thank you for the revised version of your manuscript. I am satisfied with the authors response to my comments and recommend to accept the manuscript for publication. Kind regards Susann Hueber