PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Socioeconomic differences in experiences with treatment of coronary heart disease: a qualitative study from the perspective of elderly patients
AUTHORS	Schröder, Sara Lena; Fink, Astrid; Richter, Matthias

VERSION 1 – REVIEW

REVIEWER	John Ford University of East Anglia, UK
REVIEW RETURNED	30-May-2018

GENERAL COMMENTS	Thank you for the opportunity to review this paper. It describes a qualitative study of patients who have undergone treatment for coronary heart disease. The authors identify three themes around information, illness perception and perceived role in health care. Major comments - I don't agree with the binary categorisation of high and low SES with nothing in between. In reality disadvantage is a complex spectrum. Some individuals face economic disadvantage, others social, educational or occupational, while others multiple disadvantage. Categorisations based on education and occupation are notoriously problematic. For example, a women who stayed at home to raise children cannot be easily categorised. I would advise using the term disadvantaged, rather than deprived which could be stigmatising. The authors would be advised that instead of categorising high/low SES to state "higher occupational/educational attainment group" and "lower occupational/educational attainment group" - There is an underlying assumption throughout the paper that both "high SES" patients and "low SES" patients were treated the same by health care staff. Patients from lower socio-economic groups may had been given less information about treatment options and medical records by health care staff; health care staff may have framed the conversation in terms of symptoms and survival, rather than physical performance and disease management; and finally, health care staff may have taken a paternalistic role with "low SES" patients but had more share decision making with "high SES" patients. So the role of unconscious bias towards vulnerable patients amongst health care staff should be considered. Minor comments - Why did the authors choose 59-80 years, seems arbitrary? - The interviews were rather short. We the researchers able to go into sufficient depth in this time? - I don't think adding the surnames to quotes adds anything and

should be removed to protect anonymity.
- The limitations section could have been stronger
- I presume the interviews were undertaken in German, so translation should be discussed since some of the original meaning may have been lost.

REVIEWER	Margrét Hrönn Svavarsdóttir University of Akureyri, Iceland.
REVIEW RETURNED	31-May-2018

GENERAL COMMENTS

Title of the manuscript

1. I suggest a title that better reflects your aim and results. I don't think your results allows a title that states that you identify **causes** for socioeconomic differences. You are also describing more that the treatment of the patients.

Abstract

2. Under objective, please clearly state the aims of the study. The first sentence in this section belongs to background and the second to results.
3. The first sentence in conclusion starts with, "Information" I can't get a meaning out of this sentence.

Strengths and limitations

4. You state that "as most patients were treated according to guidelines, we cannot conclude if there are socioeconomic differences in treatment of CHD in Germany.
    a. Your study does not have generalizability to conclude this.
    b. If most patient are treated by guidelines, I would assume that there is not a difference in treatment.

Introduction

5. The aim of the study is to explore patients' perspective and experiences with the **entire pathway** of coronary heart disease (CHD). CHD is a lifelong disease. It seems, to me that you are exploring patients experience **over one year** only. Therefore, I suggest that you refer from using "entire pathway".
6. The introduction starts with statement about cardiovascular diseases as a leading cause of death. Then you go on to the treatment of CHD. I suggest that you link those two or limit your writing to CHD.
7. The ultimate aim of clinical guidelines is to assist healthcare practitioners as well as patients in making evidence-based

decisions about appropriate care. Do Fihn et al. (2012) state that the aim of the guidelines is to reduce inequalities in health care? Please check this in the reference.

8. I recommend that you up-date your references and try to aim at not including references older than 10 years and have the majority under five years, unless absolute necessary. For example, there are newer existing guidelines for the diagnosis and management of patients with stable ischemic heart disease and a new (2018) systematic review on Health literacy and Coronary artery disease. This applies for the reference list for the whole manuscript.

Material and methods

Study design

9. The methodology of the study needs to be stated.
10. What was your inclusion and exclusion criteria for the selection of the sample?
11. Of 96 eligible patients 35 refused to participate. I suggest that you instead report how many agreed to participate.
12. It seems that 61 patients agreed to participate, but only 48 interviews were conducted? Please clarify and what criteria was used to select those 48 participants.
13. How did you estimate your sample size? You state that interviews were undertaken until theoretical saturation was reached. How do you define saturation, and which principles were used to decide that saturation had been reached? What was your stopping criterion after saturation had been achieved?
14. You state that maximum variation was ensured by differences in CHD severities. What measures/criteria's were used here?
15. Please rephrase the sentence in line 47-48 p. 6. "Nine patients refused to participate due to …. Death!
16. Is there a number or code to report from the Ethics Review Committee?

Data collection

17. In-depth interview, sometimes refers to an unstructured interview but more often refers to both semi-structured and unstructured interviewing (Bryman, 2012). As you are using an interview guide I assume you used semi-structured

interviews. I therefore, suggest you use that term as it is more specific.

18. Please describe the process of developing the interview guide.

Data analysis

19. Please state which method you used to analyze the data and describe the principles and process for data organization and analysis.

20. It concerns me that you decided to exclude seven patients as you believe their experience was overshadowed by other disease. Was multiple diagnosis of heart disease exclusion criteria in your study and if so why where those patients included in the study? This raises concerns about bias, reflexivity and preconceptions that may affect the results. I suggest that you reconsider including those participants. If you decide to leave those cases out of your analysis you must give a solid argument and show transparency in the process of deciding which cases were left out.
21. You state that 17 patients had been diagnosed with CHD up to one year prior to the baseline interview and that you had included them in the follow-up interviews as they had not gone through the entire treatment. Can you please rephrase this sentence and make this more clear? Did those cases not match your inclusion criteria? Did you only include patient that had finished the treatment and if so what treatment? On page 6 you state that thirty-nine follow-up interviews were conducted. What is correct? Please clarify and correct.
22. You state that patients did not provide feedback on the findings but some received summary of the findings. In what purpose was this done and what does this add?

Results

23. You describe the characteristics of your sample in Table 1. A more description of your sample would give valid information.
    a. How many patients had Myocardial infarction, NSTEMI/STEMI?
    b. How many underwent CABG and PCI?
    c. Was this a first time incidence?

    d. Some of the patients were diagnosed more than one year ago what was the average time and range of time from diagnosis?
    e. Did the patients receive any formal patient education and what did the one year follow up, that they seem to have received include?
    f. When you have added this information to the table, you can take this information out of the theme “treatment at the hospital” as appropriate.
24. The majority of patient reported treatment according to guidelines. What does this mean and what guidelines are you referring to? Please clarify.
25. Please demonstrate what measures Table 1 represents (numbers or %).
26. Please don’t repeat information in the table again in the text.
27. You state that patients were treated with either PC or ballooning – Same procedure?
28. Please write CR, PCI and CABG out in full, the first time you use it.
29. You state that quotes are pseudonoymized – please move this to the method section.
    a. In the quotes there are names of physicians, are those pseudonoymized as well?
    b. I assume that the quotes were translated. How was this done and how did you assure correct translation?
    c.
30. I am a bit confused about the presentation of your results. How many themes and subthemes do you have?
    a. I think it would help the reader to get the whole picture if you summarize the main results before you go into each theme. How many themes resulted from the analyzes and which where the themes.
    b. To me it is confusing that Figure 1 only seems to present one of the themes and in that section (Underlying causes p. 13) you talk about three major themes. So the ones that are presented before under results are not major themes?
31. At the beginning of the theme “Cardiac rehabilitation” you state that the patients **assessed** the time between hospital discharge and beginning of inpatient CR. How did they assess

this? Or are you may be using a wrong word here? Please correct or clarify.

32. You state (p. 9) that CAG was performed to implant stent and to protect circulatory system. Coronary Angiography is performed to detect obstruction, it is a special X-ray test. It's done to find out if your coronary arteries are blocked or narrowed, where and by how much. It dose not include ballooning or protect the circulatory system in any way. It seems that you tend to confuse CR, PCI and CABG.
33. On p. 10 line 15 you talk about “medical investigations” I believe it is more correct to use medical examinations.
34. You show a nice contrast with choosing quotes both from high and low SES patients. However, I have not seen any logic in the order they are presented. Sometimes SES is first sometimes second. Suggest that you decide upon which logic you use and always present in order according to that.
35. On page 14, you only show quote from low-SES patient. Please add an example from high-SES patient.
36. First quote on p. 11 line 15-19: The requirement to me to decide this. Is this a correct translation?
37. When referring to Figure 1. In the text, P. 13 48-49, please use the same order as in the figure.
38. I am not sure it is right for you to talk about patients **lack** of knowledge. Did you measure knowledge? Is this the patients perceived lack of knowledge (as the quote indicates) or did you interpret from the interview that they lack knowledge? If so what criteria do you have for lack of knowledge. I suggest that you rephrase this. This issue also comes up again in the discussion section. Bearing in mind that with increased knowledge you realize how little you know, it is not so certain that patient’s perceptions about their knowledge reflect their actual knowledge. Therefore, I suggest that you be careful with statements like the one in Discussion p. 15 line 11: high SES **had greater knowledge**.
39. What do you mean by: the patients “delegate” responsibility? Please make this clear.
40. It would strengthen your results to add a quote about illness perception and patients perceived role in health care.

Discussions

	41. Please address internal and external validity as well as reflexivity of the results. 42. There are some minor flaws in English use, I recommend that you have n native English speaking person prof reading the manuscript. For example, on p. 13. ~~a~~ patients …. and ~~a~~ their perceived role.

VERSION 1 – AUTHOR RESPONSE

Reviewer(s)' Comments to Author:

Reviewer: 1

Thank you for the opportunity to review this paper. It describes a qualitative study of patients who have undergone treatment for coronary heart disease. The authors identify three themes around information, illness perception and perceived role in health care.

Answer: Thank you very much for reviewing our study and your comments.

1. Major comments

- I don't agree with the binary categorisation of high and low SES with nothing in between. In reality disadvantage is a complex spectrum. Some individuals face economic disadvantage, others social, educational or occupational, while others multiple disadvantage. Categorisations based on education and occupation are notoriously problematic. For example, a women who stayed at home to raise children cannot be easily categorised. I would advise using the term disadvantaged, rather than deprived which could be stigmatising. The authors would be advised that instead of categorising high/low SES to state "higher occupational/educational attainment group" and "lower occupational/educational attainment group"

Answer: We choose a binary categorisation of socioeconomic status with the aim of simplification, facilitating to find differences and improving comparability with other qualitative studies, like the following:

- Marcu et al. Educational differences in responses to breast cancer symptoms: A qualitative comparative study. British Journal of Health Psychology (2017), 22, 26–41.

- Vilaro et al. Income differences in social control of eating behaviors and food choice priorities among southern rural women in the US: A qualitative study. Appetite (2016), 107, 604-612.

- Pedersen et al. Experience of exclusion: A framework analysis of socioeconomic factors affecting cardiac rehabilitation participation among patients with acute coronary syndrome. Eur J of Card Nurs (2017), 16(8), 715–23.

According to your comment we decided to discuss the dichotomization in the limitation section of the manuscript: “Finally, as we operationalised SES dichotomously based on education and occupation, we simplified the continuum of social status. We did not collect data on income, as income presents a sensitive personal issue, especially in longitudinal studies, and for older people income is a less appropriate indicator for SES because it is highly affected by retirement and difficult to collect reliable information.37”.

Like you advised we changed the term deprived to disadvantaged and state lower/higher instead of low/high. But we would like to keep up with the term “socioeconomic status” instead of “occupational/educational attainment group” in this manuscript, because many studies use an index when analysing socioeconomic status. SES is a latent construct and various indicators can be used to measure a person’s SES. The most commonly used indicators are education, job position and income, or combinations of these variables.

- Fliesser et al. Education, job position, income or multidimensional indices? Associations between different socioeconomic status indicators and chronic low back pain in a German sample: a longitudinal field study. BMJ Open (2018), 8(4): e020207.

- Yu et al. Using a composite index of socioeconomic status to investigate health disparities while protecting the confidentiality of cancer registry data. Cancer Causes & Control (2014), 25(1), 81-92.

- Psaki et al. Measuring socioeconomic status in multicountry studies: results from the eight-country MAL-ED study. Population Health Metrics (2014), 12(8) https://doi.org/10.1186/1478-7954-12-8).

We adhere to the standard demography in Germany in this study and wanted to capture different disadvantages (Destatis. Demografische standards. 2017. https://www.destatis.de/DE/Methoden/DemografischeRegionaleStandards/DemografischeStandardsInfo.html.). Therefore, we prefer to use the term socioeconomic status instead of occupational/educational attainment group, but on your demand we will change this term.

2. Major comments

- There is an underlying assumption throughout the paper that both “high SES” patients and “low SES” patients were treated the same by health care staff. Patients from lower socio-economic groups may had been given less information about treatment options and medical records by health care staff; health care staff may have framed the conversation in terms of symptoms and survival, rather than physical performance and disease management; and finally, health care staff may have taken a paternalistic role with “low SES” patients but had more share decision making with “high SES” patients. So the role of unconscious bias towards vulnerable patients amongst health care staff should be considered.

Answer: We agree with your comment. However we could only explore differences in treatment from the patient’s point of view, because we only interviewed patients in this qualitative study. Certainly, these differences might probably be caused by differences in

treatment. We discuss this in the manuscript, e.g., “We conclude that improvement in patient-provider communication might be the key to reducing healthcare inequalities, as it may increase knowledge about treatment, improve the understanding of CHD, and empower patients to assume responsibility in treatment, which can improve engagement in treatment and utilization." and "Especially with regard to CHD, studies

showed that patients are given little information by health professionals, and therefore, wide information gaps exist for all CHD patients.27, 28". In addition, we further elaborated this in the limitations section on page 21: "Especially when assessing the patient's knowledge, information, illness perception and delegation of responsibility, it needs to be considered that we only analysed the patients' perspectives and viewpoints independently of the information that were given through communication by healthcare staff." We added the physicians influence on decision making in the interpretation section on page 20: "However, the patient's assumed role is likely influenced by the physician, as a review found that physicians reported lower levels of facilitating shared decision making with patients who were rated to be unable or unwilling to participate in decision making from the physicians perspective or who showed limited awareness about their condition.35 ".

3. Minor comments

- Why did the authors choose 59-80 years, seems arbitrary?

Answer: We included elderly patients aged 60-80, because of the high prevalence of CHD in this age group. Additionally, we had to choose one patient, aged 59, as he gave important insights needed for maximal variation in the sampling. We added this information to the manuscript: "A purposive sampling strategy was used to select patients with a confirmed diagnosis of CHD at a university hospital in Germany. Additionally, the patients had to fulfil the inclusion criteria of being between 60 and 80 years and having one additional principal or secondary diagnosis of stable angina pectoris, acute coronary syndrome or cardiac arrhythmia. […] To achieve maximum variation, we also included one 59-year-old patient because of relevant experiences.".

4. - The interviews were rather short. We the researchers able to go into sufficient depth in this time?

Answer: 35-42 minutes is an average length for an interview, when using a semi-structured interview-guide (e.g., Syed et al. A qualitative insight of HIV/AIDS patients' perspective on disease and disclosure. Health Expect. (2015) 18(6): 2841–2852; or Denford et al. Understanding normality: a qualitative analysis of breast cancer patients concepts of normality after mastectomy and reconstructive surgery. Psycho-Oncology (2010) 20: 553– 558). In this study every patient was interviewed in total 77 minutes on average during two interviews. Thus, the patients reported very detailed descriptions about their experiences with treatment from their points of view.

5. - I don't think adding the surnames to quotes adds anything and should be removed to protect anonymity.

Answer: All names in this study are pseudonyms. According to the COREQ guideline each quotation should be identified, e.g. by participant numbers. We prefer to use pseudonyms with names, which is good practice in qualitative research (e.g. Lahman et al. A Rose By Any Other Name Is Still a Rose? Problematizing Pseudonyms in Research. Qualitative Inquiry (2015) 21(5), 445-45; or Hatcher et al. Mechanisms linking intimate partner violence and prevention of mother-to-child transmission of HIV: A qualitative study in South Africa. Soc Sci Med (2016) 168; 130-139.)

6. - The limitations section could have been stronger

Answer: We strengthened the limitations section on pages 20-21: “Although we provide novel insights into the possible factors and mechanisms of socioeconomic differences in treatment, the study has several limitations. The generalizability might be limited as we only recruited elderly patients in the eastern part of Germany. Therefore, these results may not reflect the experiences of younger patients or those living in other regions. Importantly, data were generated in a country with statutory health insurance and financial concerns may better explain socioeconomic differences in treatment in other countries without universal healthcare systems. There might be transferability of some of our findings to settings of CHD treatment with similar organizational and economic contexts. We increased the rigour of the study by taking the consolidation criteria for reporting qualitative research (COREQ) into account during the research process.36 Reflexivity was increased by using content analysis with a coding frame as well as coding the interviews and discussing the results with different researchers of a qualitative working group, and reporting on the process of interpretation within the results section of the manuscript. Only a few patients reported problems with access to and utilization of treatment. Throughout the narratives, only some experiences and viewpoints on treatment were found to differ according to SES. However, consideration of these aspects together led us to generate three data-driven major themes, which may elucidate the possible mechanisms of socioeconomic inequalities in treatment. But we did not find differences in treatment according to SES. Especially when assessing the patient’s knowledge, information, illness perception and delegation of responsibility, it needs to be considered that we only analysed the patients’ perspectives and viewpoints independently of the information that were given through communication by healthcare staff. Finally, as we operationalised SES dichotomously based on education and occupation, we simplified the continuum of social status. We did not collect data on income, as income presents a sensitive personal issue, especially in longitudinal studies, and for older people income is a less appropriate indicator for SES because it is highly affected by retirement and difficult to collect reliable information.37”.

7. - I presume the interviews were undertaken in German, so translation should be discussed since some of the original meaning may have been lost.

Answer: The Interviews were conducted and analysed in German language. Therefore, the original meaning was not biased or got lost during analysis. To illustrate the findings for this manuscript, we present quotations of the participant. To achieve the best possible accuracy for the translation of the presented codes we conducted a double-blind translation of the quotations that was checked by a third person. We added this information to the manuscript: “All Interviews were conducted and analysed in German language. For the Quotations and interview guide presented in this manuscript we conducted a double-blind translation from German to English that was checked by a third person.”

Reviewer: 2

Comments to the Authors:

Thank you for the opportunity to review the manuscript entitled "Identifying causes for socioeconomic differences in the treatment of coronary heart disease: a qualitative study from the perspective of elderly patients". This is a well written and interesting manuscript. I do however, have some comments and suggestions that I hope you can use to improve your work. Those are in the attached file.

Answer: Thank you very much for your valuable feedback on our manuscript, which we revised according to your suggestions.

1. I suggest a title that better reflects your aim and results. I don't think your results allows a title that states that you identify causes for socioeconomic differences. You are also describing more that the treatment of the patients.

Answer: Thank you for this advice. We changed the title to "Socioeconomic differences in experiences with treatment of coronary heart disease: a qualitative study from the perspective of elderly patients".

2. Under objective, please clearly state the aims of the study. The first sentence in this section belongs to background and the second to results.

Answer: We now stated the aim of the study and deleted the corresponding sentences in the abstract on page 2: "This qualitative study aims to analyse socioeconomic differences in patients' experiences along the treatment pathway for coronary heart disease (CHD)."

3. The first sentence in conclusion starts with, "Information" I can't get a meaning out of this sentence.

Answer: We clarified the intended meaning of this sentence in the abstract on pages 2-3: "Differences in the patient´s knowledge about treatment, their perceived role in healthcare, and illness perception can be the factors and mechanisms that contribute to explain socioeconomic inequalities in the treatment of CHD."

4. You state that "as most patients were treated according to guidelines, we cannot conclude if there are socioeconomic differences in treatment of CHD in Germany.

a. Your study does not have generalizability to conclude this.

b. If most patient are treated by guidelines, I would assume that there is not a difference in treatment.

Answer: Thank you very much for this advice. We choose to state another limitation: "Generalizability in this study might be limited as we only recruited elderly patients in a large city in the eastern part of Germany; therefore, the results may not reflect the experiences of younger patients with coronary heart disease or those in countries without universal healthcare systems."

5. The aim of the study is to explore patients' perspective and experiences with the entire pathway of coronary heart disease (CHD). CHD is a lifelong disease. It seems, to me that you are exploring patients experience over one year only. Therefore, I suggest that you refer from using "entire pathway".

Answer: The topic of the interviews was the entire pathway of care from the first symptoms up to the day of the interview. However, we rephrased the sentence on page 7 to note our intention more clearly: "To gather scientific evidence on the possible factors and mechanisms of socioeconomic inequalities in CHD treatment, we aimed to identify socioeconomic differences in the patient's perspective and their experiences with the treatment pathway for CHD in all sectors from therapy to aftercare.".

6. The introduction starts with statement about cardiovascular diseases as a leading cause of death. Then you go on to the treatment of CHD. I suggest that you link those two or limit your writing to CHD.

Answer: We changed the first sentences on page 6 according to your suggestion: “Coronary heart disease (CHD) remains the leading cause of death worldwide.1–3 Treatment of CHD includes revascularization, rehabilitation and long-term medication and aims to improve disease-related quality of life, including exercise capacity, to prevent further cardiac events and reduce mortality.”

7. The ultimate aim of clinical guidelines is to assist healthcare practitioners as well as patients in making evidence-based decisions about appropriate care. Do Fihn et al. (2012) state that the aim of the guidelines is to reduce inequalities in health care? Please check this in the reference.

Answer: Fihn et al recommend the following on page e119 of the guideline: “Healthcare providers and systems should strive to eliminate or ameliorate barriers to care for patients who have stable ischaemic heart disease and are of low socioeconomic class or ethnic minorities.” Therefore, we adapted the statement on page 6: “Access to treatment is aimed to be on the basis of need rather than of gender, residence or SES, and guidelines note the importance of reducing inequalities in healthcare.7.

8. I recommend that you up-date your references and try to aim at not including references older than 10 years and have the majority under five years, unless absolute necessary. For example, there are newer existing guidelines for the diagnosis and management of patients with stable ischemic heart disease and a new (2018) systematic review on Health literacy and Coronary artery disease. This applies for the reference list for the whole manuscript.

Answer: Thank you. We updated the references, wherever possible.

9. The methodology of the study needs to be stated.

Answer: We added to the methodology of the study on page 7: “Based on the methodology of grounded theory, we conducted an exploratory qualitative longitudinal study of elderly CHD patients to examine socioeconomic differences in access, utilization and quality of treatment”.

10. What was your inclusion and exclusion criteria for the selection of the sample? Answer: The inclusion and exclusion criteria are more clearly described in the methods

section on pages 7-8: “A purposive sampling strategy was used to select patients with a confirmed diagnosis of CHD at a university hospital in Germany. Additionally, the patients had to fulfil the inclusion criteria of being between 60 and 80 years and having one additional principal or secondary diagnosis of stable angina pectoris, acute coronary syndrome or cardiac arrhythmia. Patients were excluded from the study if they had insufficient language skills to conduct an interview in German language or were moribund.”

11. Of 96 eligible patients 35 refused to participate. I suggest that you instead report how many agreed to participate.

Answer: We now report on the patients who agreed on page 8: “We approached 96 eligible patients and asked them to attend an interview to share their experiences with CHD treatment. Participation was voluntary, the patients received no incentives, and 61 patients agreed to participate.”

12. It seems that 61 patients agreed to participate, but only 48 interviews were conducted? Please clarify and what criteria was used to select those 48 participants.

Answer: We further clarified the selection criteria on page 8: “… and 61 patients agreed to participate. Of those, we gradually chose 48 for an interview in accordance with maximum variation to assure that men and women with different SES and different CHD severities (number of atherosclerotic altered vessels, type of revascularization needed, and manifestations of angina pectoris or myocardial infarction) were represented who covered a broad spectrum of treatment experience. To achieve maximum variation, we also included one 59-year-old patient because of relevant experiences. Patients were only enrolled in the study after providing written informed consent. After 48 interviews theoretical saturation in terms of experiences with diagnosis and treatment of different CHD severities was reached.”.

13. How did you estimate your sample size? You state that interviews were undertaken until theoretical saturation was reached. How do you define saturation, and which principles were used to decide that saturation had been reached? What was your stopping criterion after saturation had been achieved?

Answer: We added this information on page 8: “After 48 interviews theoretical saturation in terms of experiences with diagnosis and treatment of different CHD severities was reached. We stopped recruiting new interviewees when the experiences of new interviews were very similar to the narratives reported earlier by other patients, and no new categories emerged during inductive coding.”.

14. You state that maximum variation was ensured by differences in CHD severities. What measures/criteria’s were used here?

Answer: We included patients with different CHD severities according to the number of atherosclerotic altered vessels, type of revascularization needed (percutaneous coronary intervention or coronary artery bypass graft surgery) and different manifestations such as symptoms of myocardial infarction or angina pectoris. We included this information in the manuscript on page 8: “Of those, we gradually chose 48 for an interview in accordance with maximum variation to assure that men and women with different SES and different CHD severities (number of atherosclerotic altered vessels, type of revascularization needed, and manifestations of angina pectoris or myocardial infarction) were represented who covered a broad spectrum of treatment experience.”.

15. Please rephrase the sentence in line 47-48 p. 6. “Nine patients refused to participate due to …. Death!

Answer: Thank you very much for this advice. We rephrased the sentence on page 8: “Eight patients refused to participate due to their disease burden, lack of interest, or failure to respond to the invitation letter, and one patient was no longer alive.”.

16. Is there a number or code to report from the Ethics Review Committee?

Answer: We added the code of the report from the Ethics Review Committee on page 8: “The study was approved by the Ethics Review Committee of the Medical Faculty at the Martin Luther University, Halle-Wittenberg (No. 2014-95).”

17. In-depth interview, sometimes refers to an unstructured interview but more often refers to both semi-structured and unstructured interviewing (Bryman, 2012). As you are using an interview guide I assume you used semi-structured interviews. I therefore, suggest you use that term as it is more specific.

Answer: We modified the sentence on page 9 according to your suggestion: “We conducted semi-structured interviews to explore the patients’ perspectives on their heart disease and their personal experiences with the treatment they received.”.

18. Please describe the process of developing the interview guide.

Answer: We added further information on the process of developing the interview guide on page 9: “The interview guide (S1 pdf) was developed according to Helfferich with key questions that evoke narrations, which were derived from the state of research.19 To cover the same topics within each interview, these key questions were supplemented by specific questions, which were only asked if not mentioned by the patient himself. The key and supplementary questions were developed by a process of collecting, checking, sorting, and subsuming topics and questions of relevance in accordance with the research question and aim.”

19. Please state which method you used to analyze the data and describe the principles and process for data organization and analysis.

Answer: We added information to the manuscript on pages 10 and 11: “After constructing the main categories that originated from the research questions, SLS coded the pseudonymised interview transcripts in a data-driven approach (inductively) sentence by sentence with codes and themes derived from the data in accordance with qualitative content analysis.22 The coding started simultaneously with the conducting of the interviews. […] The emerging codes were organized into subcategories with the existing main categories. Afterwards, we identified socioeconomic differences by comparing and contrasting the codes of the frame between patients with lower and higher SES. Codes that were found only in one group constituted the origin of comparing and contrasting the narratives to identify SES-specific patient perspectives and experiences in each phase of treatment. Building on these results, we constructed overall major themes, which characterized the differences across the continuum of care.”.

20. It concerns me that you decided to exclude seven patients as you believe their experience was overshadowed by other disease. Was multiple diagnosis of heart disease exclusion criteria in your study and if so why where those patients included in the study? This raises concerns about bias, reflexivity and preconceptions that may affect the results. I suggest that you reconsider including those participants. If you decide to leave those cases out of your analysis you must give a solid argument and show transparency in the process of deciding which cases were left out.

Answer: Thank you for this advice. We excluded those patients from this analysis as they did not mention having coronary heart disease or any therapy/treatment of coronary heart disease. Throughout the interviews, it became obvious that they were not aware of having coronary heart disease. In these cases, this was due to having another heart disease that was the centre of their attention.

We made this more explicit in the manuscript on page 11: "In the present analysis, we excluded 7 patients because neither CHD nor any CHD-indicative treatment was mentioned throughout their interviews as the narratives of treatment experiences had been overshadowed by other heart diseases.".

21. You state that 17 patients had been diagnosed with CHD up to one year prior to the baseline interview and that you had included them in the follow-up interviews as they had not gone through the entire treatment. Can you please rephrase this sentence and make this more clear? Did those cases not match your inclusion criteria? Did you only include patient that had finished the treatment and if so what treatment? On page 6 you state that thirty-nine follow-up interviews were conducted. What is correct? Please clarify and correct.

Answer: We rephrased this sentence on page 11: "Additionally, to the 41 baseline interviews, we included the narratives of those 17 follow-up interviews in the current analysis, which provided important additional information to answer the research question. In total, we analysed 58 interviews from 41 patients.".

22. You state that patients did not provide feedback on the findings but some received summary of the findings. In what purpose was this done and what does this add?

Answer: As this was only done to inform the patients, we deleted this information from the manuscript.

23. You describe the characteristics of your sample in Table 1. A more description of your sample would give valid information.

a. How many patients had Myocardial infarction, NSTEMI/STEMI?

b. How many underwent CABG and PCI?

c. Was this a first time incidence?

d. Some of the patients were diagnosed more than one year ago what was the average time and range of time from diagnosis?

e. Did the patients receive any formal patient education and what did the one year follow up, that they seem to have received include?

f. When you have added this information to the table, you can take this information out of the theme "treatment at the hospital" as appropriate.

Answer: Table 1 summarizes the sample using the information from the short standardized questionnaire asking for the patient's basic sociodemographic data and from a short questionnaire on the patients' CHD diagnosis and number of vessels included, which the study nurse extracted from the medical records for the purpose of recruitment. Unfortunately, the information that you request are not available or only available from the patient’s narratives. We could provide this information based on the patient’s knowledge and perceptions, but presenting them as a description of the sample instead of as a result of the study, would likely yield a biased perspective.

24. The majority of patient reported treatment according to guidelines. What does this mean and what guidelines are you referring to? Please clarify.

Answer: Thank you for this important advice. As this is a qualitative study from the patient’s perspective, we cannot truly conclude whether the treatment was conducted according to guidelines and if all recommendations were met. In the narratives the patients mainly reported to receive treatment, and only a few patients reported on having problems with treatment from their subjective perspective. Therefore, we deleted the sentence and described this more detailed on pages 11-12: “The majority of the patients reported utilizing treatment, e.g., revascularization at the hospital; inpatient cardiac rehabilitation; visiting their general practitioner (GP) regularly, who prescribes the medication as recommended from the hospital; and having regular appointments with a resident cardiologist. Only a few patients (from both SES groups) reported having problems with access to, utilization of or quality of treatment.”.

25. Please demonstrate what measures Table 1 represents (numbers or %). Answer: Thank you for this advice. We added the information to table 1.

26. Please don’t repeat information in the table again in the text.

Answer: We deleted the information given in the table from the text on page 11.

27. You state that patients were treated with either PC or ballooning – Same procedure? Answer: We shortened this sentence according to the research question of the manuscript on page 11: “The majority of the patients reported utilizing treatment, e.g., revascularization at the hospital; inpatient cardiac rehabilitation; visiting their general practitioner (GP) regularly, who prescribes the medication as recommended from the hospital; and having regular appointments with a resident cardiologist.”.

28. Please write CR, PCI and CABG out in full, the first time you use it.

Answer: We apologize for this mistake and have added the information to the manuscript.

29. You state that quotes are pseudonoymized – please move this to the method section. a. In the quotes there are names of physicians, are those pseudonoymized as well?

b. I assume that the quotes were translated. How was this done and how did you assure correct translation?

Answer: All names and information in the quotes have been pseudonymised. We deleted this information from the results section. To achieve the best possible accuracy for the translation of the presented codes we conducted a double-blind translation of the quotations that was checked by a third person. We added this information to the manuscript on page 9: “All Interviews were conducted and analysed in German language. For the Quotations and interview guide presented in this manuscript we conducted a double-blind translation from German to English that was checked by a third person.

30. I am a bit confused about the presentation of your results. How many themes and subthemes do you have?

a. I think it would help the reader to get the whole picture if you summarize the main results before you go into each theme. How many themes resulted from the analyzes and which where the themes.

b. To me it is confusing that Figure 1 only seems to present one of the themes and in that section (Underlying causes p. 13) you talk about three major themes. So the ones that are presented before under results are not major themes?

Answer: We apologize for this confusion. In this manuscript, the aim is to analyse differences between patients of higher and lower SES. Therefore, we do not provide information on the overall experiences with treatment but only on those codes that differed between the two groups, and emerged only in one SES group. This analysis is a result of comparing and contrasting the interviews. The results are structured from specific to general. First, we present the emerged differences within every part of treatment separately. Then, we present the three major themes of the differences that are elicited from the complete overview for all differences in experiences that emerged. These hypotheses of mechanisms of socioeconomic differences are interpretative. Therefore, we prefer to show the process of theory formation from the results of comparing and contrasting the inductive coding to the major themes that might represent the mechanisms of socioeconomic differences in treatment.

To avoid confusion, we explained the data analysis and presentation of the results more precisely in the manuscript on pages 10-11: “Afterwards, we identified socioeconomic differences by comparing and contrasting the codes of the frame between patients with lower and higher SES. Codes that were found only in one group constituted the origin of comparing and contrasting the narratives to identify SES-specific patient perspectives and experiences in each phase of treatment. Building on these results, we constructed overall major themes, which characterized the differences across the continuum of care”.

Based on your suggestion, additionally, we summarize the main results at the beginning of the results section as on page 12: “However, we found differences according to SES in the patients’ individual perceptions and perspectives on treatment, which are described separately hereafter subdivided into four sections: treatment at the hospital, rehabilitation, treatment with drugs and ambulatory aftercare. Quotations reflective of the differences are presented for patients of lower and higher SES at the various stages of treatment. Following, three major themes, which were derived from the sector-specific differences, are depicted: “information”, the “patient’s individual perception of CHD” and the “perceived role in healthcare”. These themes might characterize the factors and mechanisms of socioeconomic differences in treatment across the continuum of care”.

31. At the beginning of the theme “Cardiac rehabilitation” you state that the patients assessed the time between hospital discharge and beginning of inpatient CR. How did they assess this? Or are you may be using a wrong word here? Please correct or clarify.

Answer: We clarified this sentence on page 14: “Some patients reported whether the time interval between their discharge from hospital and the beginning of inpatient cardiac rehabilitation was either too long or too short for their individual needs”.

32. You state (p. 9) that CAG was performed to implant stent and to protect circulatory system. Coronary Angiography is performed to detect obstruction, it is a special X-ray test. It's done to find out if your coronary arteries are blocked or narrowed, where and by how much. It dose not include ballooning or protect the circulatory system in any way. It seems that you tend to confuse CR, PCI and CABG.

Answer: Thank you for this advice. Our intention was to explain the patient's views. From the patient's perspective, the reason for prematurely terminating a first CAG (followed by a second CAG with stent-implantation within a few days) was to protect the circulatory system. Therefore, protecting the circulatory system was the aim of stopping the first CAG in the patient's perspective. This was only an example of reasons reported by high-SES patients, to note for the reader that only low-SES patients did not report any reasons for the interventions performed. To avoid confusion, we clarified the sentence on page 12: "With regard to revascularization, some patients reported that a second coronary angiography (CAG) was scheduled and conducted within a few days for different reasons. However, only lower-SES patients did not scrutinise or mention the reason when a diagnostic-only CAG was followed by a second CAG with stent implantation".

33. On p. 10 line 15 you talk about "medical investigations" I believe it is more correct to use medical examinations.

Answer: Thank you for this advice; we changed the wording according to your suggestion.

34. You show a nice contrast with choosing quotes both from high and low SES patients. However, I have not seen any logic in the order they are presented. Sometimes SES is first sometimes second. Suggest that you decide upon which logic you use and always present in order according to that.

Answer: Thank you for this important note; we changed the order of the presented quotes logically so that the order is always first lower-SES followed by higher-SES quotes.

35. On page 14, you only show quote from low-SES patient. Please add an example from high-SES patient.

Answer: We added a quote from a higher-SES patient on page 18: "You need to directly address the physicians; they do not have the time as well. You can notice that during the doctor´s visits. Well, then it is clear. But otherwise you get an answer to any question; pleasant, polite, courteous." (Mr. Schäfer, 71 years, higher SES)".

36. First quote on p. 11 line 15-19: The requirement to me to decide this. Is this a correct translation?

Answer: Thank you for this advice. We discussed the translation on page 14 again and changed it to clarify: "The demand placed on me to decide this".

37. When referring to Figure 1. In the text, P. 13 48-49, please use the same order as in the figure.

Answer: Thank you for this advice. We changed the order in Figure 1 and adjusted it to the order used throughout the manuscript.

38. I am not sure it is right for you to talk about patients lack of knowledge. Did you measure knowledge? Is this the patients perceived lack of knowledge (as the quote indicates) or did you interpret from the interview that they lack knowledge? If so what criteria do you have for lack of knowledge. I suggest that you rephrase this. This issue also comes up again in the discussion section. Bearing in mind that with increased knowledge you realize how little you know, it is not so certain that patient's perceptions about their knowledge reflect their actual knowledge. Therefore, I suggest that you be careful with statements like the one in Discussion p. 15 line 11: high SES had greater knowledge.

Answer: As you mention, lack of knowledge can rarely be noticed and reflected by the patient himself. In the revised manuscript we further elaborated on the theme "information". It was a major theme derived from the individual points of differences found in every section of treatment, which became apparent by comparing and contrasting the narratives of experiences with treatment. Lack of Knowledge was NOT a theme found in the patient's perception of their knowledge. Therefore, we found greater knowledge regarding the treatment that was performed in higher-SES patients. In addition, some patients mentioned what they did not know, e.g., the reasons for or outcomes of medical examinations. When this became apparent in only lower-SES patients, we evaluated this as a difference. The individual points of differences found in every section of treatment are that

- Only lower-SES patients did not scrutinise or mention the reason when a diagnostic-only CAG was followed by a second CAG with stent implantation.

- Higher-SES patients knew about different treatment options.
- An information deficit was found in some narratives, e.g., patients reporting that they did not know the outcome of medical examinations, were unaware of the treatment that had been performed or rated the medical reports incomprehensible. An information deficit became apparent mainly in lower-SES patients, although this was not always experienced with a perceived greater need for information.
- Some mainly higher-SES patients used medical reports as sources of information for the need of follow-up care.

We clarified the method of data analysis more clearly on pages 10-11: "Afterwards, we identified socioeconomic differences by comparing and contrasting the codes of the frame between patients with lower and higher SES. Codes that were found only in one group constituted the origin of comparing and contrasting the narratives to identify SES-specific patient perspectives and experiences in each phase of treatment. Building on these results, we constructed overall major themes, which characterized the differences across the continuum of care".

39. What do you mean by: the patients "delegate" responsibility? Please make this clear.

Answer: We tried to describe the differences in the patient's perceived role in their health care more clearly on page 18: "Lower-SES patients tended to delegate responsibility for treatment, which became apparent, e.g., by the patients not questioning the reasons for the decisions made, assuming that healthcare professionals are responsible for patients being taken seriously, not perceiving a need to obtain information even when lacking information, being less involved in decision making, relying on physicians to coordinate care (referrals, medication), viewing themselves as only responsible for the retention of medical records, and having a tendency to have general views rather than opinions. Contrastingly, higher-SES patients seem to feel more responsible for treatment, e.g., focusing more strongly on disease management, having increased healthcare knowledge, making informed choices or actively involving their GP". We consider this issue as well in the limitations section on page 21 that delegation of responsibility is derived only from the patient's experiences and not the physicians viewpoints: "Especially when assessing the patient's knowledge, information, illness perception and delegation of responsibility, it needs to be considered that we only analysed the patients' perspectives and viewpoints independently of the information that were given through communication by healthcare staff".

40. It would strengthen your results to add a quote about illness perception and patients perceived role in health care.

Answer: These major themes constituting possible mechanisms of socioeconomic differences in CHD treatment emerged by comparing and contrasting the interviews and experiences with treatment of the patients with high and low SES. Therefore, they are not reported by the patients and cannot be quoted, as they are a result of the interpretation of the differences outlined in the first part of the results section.

We structured the results section with a detailed description of the differences that emerged by comparing and contrasting the experiences along the treatment pathway of CHD. This description is underpinned by quotes. Building on these results, we constructed major themes, which characterize the differences across the continuum of care. Thereafter, the three major themes "information", "illness perception" and the patients „perceived role in health care" are explained but are not represented in quotes.

However, differences in illness perception can be retraced from these quotes of the results section:

"Well, in the hope that everything stays the same. Let´s say that you are well. Well, getting around with it quite well, with no complications arising. As I said, that one may reach a slightly older age, not just until retirement, but perhaps even a bit longer." (Mr. Lange, 60 years, low-SES)

"Well, but then it came up with the heart and I myself had the feeling that it is probably the only thing that really gets you back on your feet. I was really feeling sluggish. So. I did indeed make an effort to try to walk again quickly and to/ I really did, but somehow in the end the energy was lacking." (Mr. Lehmann, 63 years, high-SES)
"Indeed, in rehabilitation it was great. Well, there was/ every morning you had to go to the presentation, weighing, measuring blood pressure and stuff like that." (Mrs. Koch, 62 years, low-SES)

"Over there I primarily learned through lectures and, as I said before, through meetings about what the issue of a heart attack means, how it emerges and so on. This improved much of my understanding. Previously, before you have something like that you don´t care about it. So, concerning this matter one was educated quite well." (Mr. Jung, 67 years, high-SES)

Differences in patients perceived role in healthcare can be retraced from these quotes of the results section:

"With this I entirely relied on the physicians. In fact, I didn´t really thought about it. When they said: ´This´, then we do this. They do ask indeed: ´Mr. Zimmermann, do you agree?´ I mean, when I go to the hospital, I let myself be treated, but this is not meant to be negative in any way. But I rely on the physicians. [...] They are the professionals. I would never pretend to be the wise guy, as I know people who do so, not physicians, but private persons, who dictate people what to do.” (Mr. Zimmermann, 76 years, low-SES)

“Today quite a few medical exams have been conducted with me. Now you have to wait, but I guess it won´t change anything about this final decision. The demand placed on me to decide this.” (Mr. Hartmann, 69 years, high-SES)

“Or, for example, if there are changes in medication, it is very important. With prothrombin time and everything; you need to be always in good hands. Not that one says this way and the other one says that way. That´s bad.” (Mr. Köhler, 66 years, low-SES)

“I have to take many drugs; they upset the stomach and everything. I had to take 17 or 18 different pills. Well, and then I recognized, I read about it, there is a patch and so on and using that you can come off of 5 drugs at once. The patches are indeed very expensive and the doctor immediately said ´no and no and no´ and so on. Now I have this patch and I am feeling fine.” (Mr. Richter, 66 years, high-SES)

41. Please address internal and external validity as well as reflexivity of the results. Answer: We added information on validity and reflexivity in the limitations section on pages
20.21: “The generalizability might be limited as we only recruited elderly patients in the eastern part of Germany. Therefore, these results may not reflect the experiences of younger patients or those living in other regions. Importantly, data were generated in a country with statutory health insurance and financial concerns may better explain socioeconomic differences in treatment in other countries without universal healthcare systems. There might be transferability of some of our findings to settings of CHD treatment with similar organizational and economic contexts. We increased the rigour of the study by taking the consolidation criteria for reporting qualitative research (COREQ) into account during the research process.36 Reflexivity was increased by using content analysis with a coding frame as well as coding the interviews and discussing the results with different researchers of a qualitative working group, and reporting on the process of interpretation within the results section of the manuscript.

42. There are some minor flaws in English use, I recommend that you have n native English speaking person prof reading the manuscript. For example, on p. 13. a patients …. and a their perceived role.

Answer: Professional proofreading was performed for the revised manuscript.

VERSION 2 – REVIEW

REVIEWER	Margrét Hrönn Svavarsdóttir University of Akureyri, Iceland.
REVIEW RETURNED	14-Aug-2018

GENERAL COMMENTS	This manuscript has been carefully revised and I believe it has resulted in improved manuscript. Good luck