PEER REVIEW HISTORY

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

This paper was submitted to a another journal from BMJ but declined for publication following peer review. The authors addressed the reviewers' comments and submitted the revised paper to BMJ Open. The paper was subsequently accepted for publication at BMJ Open.

(This paper received three reviews from its previous journal but only two reviewers agreed to published their review.)

ARTICLE DETAILS

TITLE (PROVISIONAL)	Informal and formal care preferences and expected willingness of providing elderly care in Germany: protocol for a mixed methods study
AUTHORS	de Jong, Lea; Plöthner, Marika; Stahmeyer, Jona Theodor; Eberhard, Sveja; Zeidler, Jan; Damm, Kathrin

VERSION 1 – REVIEW

REVIEWER	Juan Oliva-Moreno Universidad de Castilla-La Mancha. Spain.
REVIEW RETURNED	30-Apr-2018

GENERAL COMMENTS	Dear Editor,
	The manuscript entitled "Informal and formal care preferences and expected willingness of providing elderly care in Germany: protocol for a mixed methods study " is well written and organized. The objective of the study is clearly shown and the methods of work and analysis proposed are well detailed. In addition, the authors demonstrate a clear understanding of the existing literature on Discrete Choice Experiments and its method of application. Therefore, I can only make some minor comments.
	Comments
	1. Methods and Analysis. Page 5 of 15. Lines 47-55. It is recommended to add the key words "long term care", in addition to the three concepts already included.
	2. Methods and Analysis. Page 8 and 9 of 15. Lines 57 (8) - 3 (9). The authors assume a response rate of 1/3. Will there be some kind of control to check if the sociodemographic profile of the respondents is similar to that of the people who do not respond?
	3. Discussion. Page 10 Lines 7-10 of 15. The authors mention that "the surveyed willingness to provide care and willingness to pay for services of the German general population can be used to better tailor existing services." Does this phrase mean that willingness to pay (WTP) to receive formal or informal services is a part of the DCE or that an additional analysis to determine the WTP will be made? If the answer would be

affirmative, it would be convenient to provide more information about the contingent valuation method in the manuscript.
4. Introduction Page 4 of 15. Lines 44-47. The authors point out "In light of changing family dynamics, such as increasing the rates of women and growing geographic distances of family members, some experts expect the rates of informal caregiving to decrease in the future [8, 9]." Maybe it would be more correct indicate "In light of changing family dynamics, such as increasing employment rates of women and growing geographic distances of family members, while other family dynamics hardly vary, male labour participation and involvement as caregivers, some experts expect the rates of informal caregiving to decrease in the future [8, 9]. "

REVIEWER	Julia Strupp University Hospital Cologne Department of Palliative Medicine
REVIEW RETURNED	29-Jun-2018

GENERAL COMMENTS	Thank you for very much for asking me to review this very	
	interesting protocol on informal and formal care preferences using	
	a discrete choice experiment. The method is clearly presented and	
	the project of relevance especially to those in need of care and to	
	those providing informal / formal care.	
	Minor comments:	
	Page 4, line 18: When first writing "discrete choice experiment",	
	please add the abbreviation DCE here and delete in line 30.	
	Please add a reference to the DCE, if possible.	
	Page 4, line 31: please add with whom the face to face interviews will be conducted.	
	Page 7, line 15: would it be better to use the word "consent"	
	instead of "permission"?	
	Page 7, line 22: are the deductive categories identified in the	
	interview guide or rather in the interview transcripts?	
	Page 7, line 23: for whom is the codebook intended?	
	Page 8, line 44: why do you include only people up to 65 and not	
	older? Please elaborate.	

REVIEWER	Andrea Teti, Prof. Dr. Institut für Gerontologie Fakultät I, Bildungs- und Gesellschaftswissenschaften Universität Vechta Driverstr. 22 D- 49377 Vechta
REVIEW RETURNED	12-Jul-2018

GENERAL COMMENTS	Review Manuscript Number: bmjopen-2018-023253	
	Informal and formal care preferences and expected willingness of providing elderly care in Germany: protocol for a mixed methods study	
	Comments to the authors:	
	I was asked to review the manuscript "Informal and formal care preferences and expected willingness of providing elderly care in Germany". The paper makes a welcome contribution to the very scattered literature on preferences and willingness in the area of eldercare provision in Germany.	
	The contribution consists in the protocol of a planned study on formal and informal eldercare based on mixed methods	

	(systematic review, qualitative interviews and labelled discrete choice experiment). The study aims to explore preferences for formal and informal care services and the willingness to assume care activities in the general population. The final objective of this survey is to provide information and indications towards a better tailoring of current care structures and payment systems in German eldercare.
	The paper reads well and the authors present the results in a comprehensive way. In general, I enjoyed reading the methodological contribution and found it informative and interesting. However, the following minor recommendations may further improve the quality of the paper:
	Introduction: To better lead readers through the paper's topic, the authors should add one or more sentences explaining the presented theoretical arguments. These should refer to both the topics of the study "willingness to assume care" and "preferences for care services". In this way, the authors could also provide a solid scientific background, including key literature, to set the stage more precisely.
	Systematic literature review: The description of the search strategy seems to be somewhat imprecise. What are the pre-defined inclusion and exclusion criteria? At this point, I was missing a thorough definition of terms, as well as the combination strategy or search syntax. Moreover, I would appreciate it if the authors would include a specific timeframe. For example, the results timed before 1996 (introduction of nursing care insurance in Germany) are not comparable to current findings.
	Face-to face interviews: For the semi-structured, guideline-based interviews, it would also be interesting to know which categories the authors apply for each specific subgroup (informal caregivers, care consultants and people without care experience). Furthermore, I am skeptical that theoretical saturation (for three subgroups) can be reached by means of 20-30 interviews overall. In the methodological approach of the theoretical sampling, the authors should not define the number of interviews a priori.
	DCE design As a primary advantage over conventional survey methods, the DCE design offers the experimental variation of the values for individual attributes. This variation makes it possible to estimate the precise impact of those attributes on respondents' judgments or decisions. It is also possible to isolate the weighting of factors that are often confounded in reality. For this reason, it is important to maximize the full factorial sample. When implementing the DCE design, the authors block certain choice sets in order to increase the response efficiency by reducing the information load of participants. In the literature, there are many methodological strategies to reduce the complexity of the full factorial sample (e.g. randomized selection or content-based selection, etc.). Please provide a reference that supports your methodological decision. "D-efficiency" is not a standard term and might not be familiar to the readership.
L	

Data collection and sampling strategy The authors state: "Study participants will be recruited in cooperation with a statutory health insurance by random selection of insured Germans." Regardless of whether private, scientific or commercial in background, as of late May 2018, a new European data protection regulation is in place for access to personal data. How can the statutory health insurance provide contact data to research partners (e.g. e-mail contacts or addresses of insured persons) without previous written permission? Please be more precise regarding the contact and data protection procedures.
One more point is in regard to the option to excerpt a certain number of items from the WHOQOL-BREF instrument. I would suggest considering the use of an alternative, shorter instrument, such as EQ-5D-5L, or to describe the WHOQOL-BREF collapsing strategy.
References
In general, please provide English titles for all German papers, if available, e.g. the reference to Hajek (2017) [Hajek A, Lehnert T, Wegener A, et al. Informelles Pflegepotenzial bei Älteren in Deutschland: Ergebnisse einer bevölkerungsrepräsentativen Befragung. ZGG 2017] has an English title version as well [Potential for informal care of the elderly in Germany: Results of a representative population-based survey].
Therefore, most of the references are incomplete or inconsistent:
 Matthews et. al. [Incomplete: WHO? URL? Date accessed] Destatis [Incomplete: URL, date accessed] Date accessed Edition Date accessed Volume, No., DOI DOI Etc. : Please check all references carefully
Author's contributions
 BMJ-Open recommends that authorship be based on the following four criteria: Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND Drafting the work or revising it critically for important intellectual content; AND Final approval of the version to be published; AND Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.
Contributors who meet fewer than all four of the above criteria for authorship should not be listed as authors, but they should be acknowledged. In the following statement "LDJ was responsible for drafting the manuscript. All authors approved the final study design and were involved in revising the manuscript", the preconditions for the further researchers (with the exception of the first author – JDJ) to be listed as author are not recognizable. Please revise the statement or discuss the authorship in the research team.

VERSION 1 – AUTHOR RESPONSE

Reviewer Comment	Dealing with the comment	Solution in the paper
Reviewer: 1 Reviewer Name: Juan Oliva-Moreno Institution and Country: Universidad de Castilla-La Mancha. Spain. Please state any competing interests or state 'None declared': None declared		
Dear Editor, The manuscript entitled "Informal and formal care preferences and expected willingness of providing elderly care in Germany: protocol for a mixed methods study " is well written and organized. The objective of the study is clearly shown and the methods of work and analysis proposed are well detailed. In addition, the authors demonstrate a clear understanding of the existing literature on Discrete Choice Experiments and its method of application. Therefore, I can only make some minor comments.	Thank you very much for taking the time to review our study protocol, as well as the comments below.	
1. Methods and Analysis. Page 5 of 15. Lines 47-55. It is recommended to add the key words "long term care", in addition to the three concepts already included.	We have now included "long term care" as a forth concept, thank you.	See Methods and Analysis: "A list of search terms of the four main concepts "informal and formal care", "long term care", "preferences" and "age of interest" will be created and connected with the Boolean operators AND and OR."
2. Methods and Analysis. Page 8 and 9 of 15. Lines 57 (8) - 3 (9). The authors assume a response rate of 1/3. Will there be some kind of control to check if the sociodemographic profile of the respondents is similar to that of the people who do not respond?	Thank you for this remark. We will check the distribution of mean age and sex of the included respondents and those people who did not respond to make sure that no significant difference between the sociodemographic profiles exist. With this type of control we hope to minimise bias.	See Data Analysis of DCE: "We will analyse and compare the distribution of mean age and sex between the included respondents of the DCE and the people who did not respond."
3. Discussion. Page 10 Lines 7- 10 of 15. The authors mention that "the surveyed willingness to	We would like to integrate the WTP as an attribute in our DCE, thus an additional	See Design of the DCE:

provide care and willingness to pay for services of the German general population can be used to better tailor existing services." Does this phrase mean that willingness to pay (WTP) to receive formal or informal services is a part of the DCE or that an additional analysis to determine the WTP will be made? If the answer would be affirmative, it would be convenient to provide more information about the contingent valuation method in the manuscript.	analysis will not be necessary. To avoid confusion for readers, we have added a short remark to this in our study protocol.	"We would like to respectively include at least one attribute connected to cost (or time). The willingness to pay for services will be integrated as an attribute in the DCE."
4. Introduction Page 4 of 15. Lines 44-47. The authors point out "In light of changing family dynamics, such as increasing the rates of women and growing geographic distances of family members, some experts expect the rates of informal caregiving to decrease in the future [8, 9]." Maybe it would be more correct indicate "In light of changing family dynamics, such as increasing employment rates of women and growing geographic distances of family members, while other family dynamics hardly vary, male labour participation and involvement as caregivers, some experts expect the rates of informal caregiving to decrease in the future [8, 9]. "	That is indeed true, we have added it in the protocol.	See Introduction: "In light of changing family dynamics, such as increasing employment rates of women and growing geographic distances of family members, while male labour participation and involvement as informal caregivers has remained nearly consistent, some experts expect the rates of informal caregiving to decrease in the future [8, 9]."
Reviewer: 2 Reviewer Name: Julia Strupp Institution and Country: University Hospital Cologne, Department of Palliative Medicine Please state any competing interests or state 'None declared': None declared		
Thank you for very much for asking me to review this very interesting protocol on informal and formal care preferences using a discrete choice experiment. The method is clearly presented and the project of relevance especially to those	Thank you very much for reviewing our study protocol, as well as the positive feedback. We have addressed all of your comments in our study protocol, thank you for	

in need of care and to those providing informal / formal care.	drawing our attention to these points.	
Minor comments: Page 4, line 18: When first writing "discrete choice experiment", please add the abbreviation DCE here and delete in line 30. Please add a reference to the DCE, if possible.	Thank you, we have added the abbreviation in line 18, when first mentioning DCE. We have also added two references.	See Aims: "This study will be the first to use a discrete choice experiment (DCE) as a validated stated preference method to measure the caregiving preferences of the German general population [16, 17]."
Page 4, line 31: please add with whom the face to face interviews will be conducted.	We have added the abbreviation of the first author, who will be conducting all interviews.	See Face-to-face Interviews: "One experienced researcher (LDJ) will conduct all interviews to ensure homogeneity."
Page 7, line 15: would it be better to use the word "consent" instead of "permission"?	We agree and have changed it in the protocol.	See Interview analysis: "With the informed consent of each participant, all interviews will be recorded, transcribed and subsequently analysed."
Page 7, line 22: are the deductive categories identified in the interview guide or rather in the interview transcripts?	The deductive categories will be identified in the interview guide, while the inductive categories will be identified during the analysis of each interview transcript.	See Interview analysis: "The content analysis will take on a directed approach, making use of deductive categories identified in the interview guide, while at the same time leaving room for further inductive categories generated during the analysis of the interview transcripts [18]."
Page 7, line 23: for whom is the codebook intended?	The codebook is intended for the two researchers to help with the coding process.	See Interview analysis: "A codebook will additionally be created for the two researchers performing the analysis."
Page 8, line 44: why do you include only people up to 65 and not older? Please elaborate.	The cut-off is made at 65 years of age, because we would like to increase the probability of study respondents still working. Compatibility of family, career	See Data collection and sampling strategy: "For the sample, people between 18 and 65 years of age will be recruited from the

	and providing care is expected to influence the willingness to provide care.	German general population with no own need for care. The aim of the age limit is the ascertainability of a group of people of working age with no own dependency on care. Occupational and familial obligations are expected to influence the individual willingness to provide care for relatives."
Reviewer: 3 Reviewer Name: Andrea Teti, Prof Institution and Country: Institut für Please state any competing interes	Gerontologie Universität Vechta	
I was asked to review the manuscript "Informal and formal care preferences and expected willingness of providing elderly care in Germany". The paper makes a welcome contribution to the very scattered literature on preferences and willingness in the area of eldercare provision in Germany. The contribution consists in the protocol of a planned study on formal and informal eldercare based on mixed methods (systematic review, qualitative interviews and labelled discrete choice experiment). The study aims to explore preferences for formal and informal care services and the willingness to assume care activities in the general population. The final objective of this survey is to provide information and indications towards a better tailoring of current care structures and payment systems in German eldercare. The paper reads well and the authors present the results in a comprehensive way. In general, I enjoyed reading the methodological contribution and found it informative and	Thank you very much for taking the time to review our study protocol. We appreciate the positive feedback, as well as your remarks for improvement.	

interesting. However, the following minor recommendations may further improve the quality of the paper: Introduction: To better lead readers through the paper's topic, the authors should add one or more sentences explaining the presented theoretical arguments. These should refer to both the topics of the study "willingness to assume care" and "preferences for care services". In this way,	Thank you for this remark. We have added an additional sentence on the results of key studies in the field, in particular the determinants of using home care services. We hope that our theoretical arguments (economic theories to explain informal caregiving e.g. altruism,	See Introduction: "Studies have found determining factors of making use of home care services to include having children, previous experience in providing informal care, as well as the proximity of family resources [8, 13–15]."
the authors could also provide a solid scientific background, including key literature, to set the stage more precisely.	strategic exchanges) are explained sufficiently.	
Systematic literature review: The description of the search strategy seems to be somewhat imprecise. What are the pre- defined inclusion and exclusion criteria? At this point, I was missing a thorough definition of terms, as well as the combination strategy or search syntax. Moreover, I would appreciate it if the authors would include a specific timeframe. For example, the results timed before 1996 (introduction of nursing care insurance in Germany) are not comparable to current findings.	We have indeed already thought about possible search terms, in- and exclusion criteria, as well as the databases. After long consideration and discussion, we decided to avoid too many specifics of the methodologies of each of our research steps in the study protocol. Thus, we will be able to go into more detail when we publish the results of our systematic literature review and illustrate its part in a larger study by making reference to this study protocol. Additionally, we would not like to limit the timeframe beforehand, but will of course keep key dates such as the introduction of nursing care insurance in 1996 in mind, when analysing the included studies.	
Face-to face interviews: For the semi-structured, guideline-based interviews, it would also be interesting to know which categories the authors apply for each specific subgroup (informal caregivers,	Thank you for this remark, we have deleted the estimated amount of interviews. For the coding of the interviews, we will apply deductive categories identified in the interview guide and inductive	See Face-to-face Interviews: "The total sample size will be based on the principle of theoretical saturation, meaning

care consultants and people without care experience). Furthermore, I am skeptical that theoretical saturation (for three subgroups) can be reached by means of 20-30 interviews overall. In the methodological approach of the theoretical sampling, the authors should not define the number of interviews a priori.	categories generated during the analysis. The categories will of course be specific to each subgroup, but can only be identified after conducting all interviews. We will elaborate on these in the publication of the face-to-face interviews.	no new views on the topic are expressed [21]."
DCE design As a primary advantage over conventional survey methods, the DCE design offers the experimental variation of the values for individual attributes. This variation makes it possible to estimate the precise impact of those attributes on respondents' judgments or decisions. It is also possible to isolate the weighting of factors that are often confounded in reality. For this reason, it is important to maximize the full factorial sample. When implementing the DCE design, the authors block certain choice sets in order to increase the response efficiency by reducing the information load of participants. In the literature, there are many methodological strategies to reduce the complexity of the full factorial sample (e.g. randomized selection or content-based selection, etc.). Please provide a reference that supports your methodological decision. "D- efficiency" is not a standard term and might not be familiar to the readership.	Thank you for this remark. We have included further explanation of the D- efficiency criterion, as well as 2 references (Lancsar & Louviere, 2008; De Bekker- Grob, Ryan & Gerard, 2012).	See Design of the DCE: "Statistical efficiency and response efficiency need to be balanced to maximise the precision of parameter estimates [30]. We will use the D-efficiency criterion as a measure of statistical efficiency, while blocking certain choice sets will be used to increase response efficiency by reducing the information load of participants. The D- efficiency criterion has been increasingly used to measure statistical efficiency when aiming to create optimal designs with an efficiency of 100%. Thus, we will create choice sets that minimise the D-error, which respectively maximises the D-efficiency [26, 28]."
Data collection and sampling strategy The authors state: "Study participants will be recruited in cooperation with a statutory health insurance by random selection of insured Germans." Regardless of whether private,	The statutory health insurance will be responsible for recruiting potential study participants, thus we will only receive personal data of the people interested in participating in the study and	See Data collection and sampling strategy: "In accordance with the new European General Data Protection Regulation, the statutory health insurance will be in charge of recruitment and

scientific or commercial in background, as of late May 2018, a new European data protection regulation is in place for access to personal data. How can the statutory health insurance provide contact data to research partners (e.g. e-mail contacts or addresses of insured persons) without previous written permission? Please be more precise regarding the contact and data protection procedures.	that have provided informed written consent.	contacting potential study participants. We will only receive the filled out questionnaires of study participants after written informed consent has been obtained. All personal data, i.e. sociodemographic characteristics, will be provided to us in a pseudonymised manner [32]."
One more point is in regard to the option to excerpt a certain number of items from the WHOQOL-BREF instrument. I would suggest considering the use of an alternative, shorter instrument, such as EQ-5D-5L, or to describe the WHOQOL- BREF collapsing strategy.	We agree and have now chosen the EQ-5D-5L instrument to measure quality of life. As we would also like to ask for a number of sociodemographic features of the respondents, a shorter instrument will hopefully ensure the feasibility of the questionnaire in terms of time.	See Data collection and sampling strategy: "To measure the health-related quality of life of study participants, we will use the standardised EQ-5D-5L instrument, consisting of the five dimensions mobility, self- care, usual activities, pain/discomfort and anxiety/depression. Next to the descriptive system of the instrument, comprised of the five dimensions with five severity levels each, respondents will also be asked to judge their current health state on a visual analogue scale from 0 to 100 [34]."
References In general, please provide English titles for all German papers, if available, e.g. the reference to Hajek (2017) [Hajek A, Lehnert T, Wegener A, et al. Informelles Pflegepotenzial bei Älteren in Deutschland: Ergebnisse einer bevölkerungsrepräsentativen Befragung. ZGG 2017] has an English title version as well [Potential for informal care of the elderly in Germany: Results of a representative population-based survey].	We have adjusted the reference list in our paper, as well as the in-text references. When available, we have used the English titles of the German papers. However, for some references (electronic citations) no English titles were available. Thus, we could unfortunately only provide the German titles and hope this is sufficient.	<u>See References</u>

Therefore, most of the references are incomplete or inconsistent: 1. Matthews et. al. [Incomplete: WHO? URL? Date accessed] 2. Destatis [Incomplete: URL, date accessed] 3. Date accessed 4. Edition 6. Date accessed 7. Volume, No., DOI 9. DOI Etc. : Please check all references carefully		
Author's contributions BMJ-Open recommends that authorship be based on the following four criteria: • Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND • Drafting the work or revising it critically for important intellectual content; AND • Final approval of the version to be published; AND • Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.	We have revised the statement to fit the four criteria for authorship.	See Author's contributions: "LDJ, KD, MP and JZ were involved in the design of the study. JTS and SE were responsible for the design of the recruitment process. LDJ was responsible for drafting the manuscript. All authors approved the final study design and were involved in revising the manuscript. All authors agree to be accountable for all aspects of the work."
Contributors who meet fewer than all four of the above criteria for authorship should not be listed as authors, but they should be acknowledged. In the following statement "LDJ was responsible for drafting the manuscript. All authors approved the final study design and were involved in revising the manuscript", the preconditions for the further researchers (with the exception of the first author –		

JDJ) to be listed as author are	
not recognizable. Please revise	
the statement or discuss the	
authorship in the research team.	

VERSION 2 – REVIEW

REVIEWER	Juan Oliva-Moreno Universidad de Castilla-La Mancha. Spain.
REVIEW RETURNED	29-Oct-2018
GENERAL COMMENTS	The authors have responded to all my comments. Therefore, I can only wish you good luck with the study.
	My only comment concerns the control of non-responders. Although the authors point out that "We will analyze and compare the distribution of mean age and sex between the included respondents of the DCE and the people who did not respond.", I believe that they should include household income adjusted for household size (following, for instance, OECD equivalence scales: http://www.oecd.org/eco/growth/OECD-Note- EquivalenceScales.pdf), among the non-response control variables. This variable could be a good proxy of the opportunity cost of the time for answering the questionnaire and, thus, its inclusion when analyzing the lack of response can avoid (or help to identify) self-selection biases. Sincerely, Juan Oliva

REVIEWER	Andrea Teti Institute of Gerontology University of Vechta - Lower Saxony, Germany
REVIEW RETURNED	12-Oct-2018

GENERAL COMMENTS I agree with the changes and support the publication of the paper

VERSION 2 – AUTHOR RESPONSE

Reviewer 1: Thank you for your comment regarding the control of non-responders. While we agree that the use of household income adjusted for household size would be very interesting and could help us identify self-selection bias, we unfortunately do not have access to these variables. We will only know the age and gender of the participants and non-responders, thus we will only be able to control for those two variables. Nevertheless, we will of course have further sociodemographic information on the participants of the DCE (e.g. age, gender, household income, household size, education, occupation) and can compare these with the German population to check for representativity of our sample.

Reviewer 3: Thank you very much.