PEER REVIEW HISTORY

BMJ Paediatrics Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Mental Health of Children with Special Healthcare Needs and their Caregivers during COVID-19: A cross-sectional study
AUTHORS	Geweniger, Anne Haddad, Anneke Barth, Michael Högl, Henriette Mund, Annette Insan, Shrabon Langer, Thorsten

VERSION 1 – REVIEW

REVIEWER	Reviewer name: Dr. Peter Flom Institution and Country: Peter Flom Consulting New York, United States Competing interests: None
REVIEW RETURNED	20-Apr-2022

GENERAL COMMENTS	I confine my remarks to statistical aspects of this paper. These were generally very well done. However, on p. 6 the authors say that model fit was assessed with R^2. There is no R^2 for logistic regression. There are various pseudo R^2 measures, but all of them have problems. I think this sentence could be dropped, or modified. Assessing model fit in logistic reg. is hard. Peter Flom

REVIEWER	Reviewer name: Dr. Nick Spencer Institution and Country: University of Warwick Warwick Medical School, United Kingdom of Great Britain and Northern Ireland Competing interests: None
REVIEW RETURNED	29-Apr-2022

GENERAL COMMENTS	This paper makes an important contribution to the literature on the impact of the COVID-19 pandemic on the mental health of children. The sequential cross-sectional design allowing the research group to monitor the pandemic's impact at different times is a particular strength plus the comparison of the impact on children with special health care needs (SHCN) with those with no SHCN. The statistical analysis is thorough and robust and the authors acknowledge limitations of the method such as the sampling strategy. In my view, the paper could be strengthened in the following ways: 1. The title refers exclusively to children with SHCN but a major strength of the paper is the comparison of the impact on SHCN and non-SHCN children. I suggest the title is changed to reflect this 2. The authors recognize the problems of the self-selected sample which produced a non-representative sample biased to high SES families; however, the potential bias the analysis of the relationship of child mental health with SES by underestimating the effect of low SES is not discussed. 3. 68% of those accessing the survey were included in the final sample. Table 1 lists the characteristics of the final sample but there

	are no data on the characteristics of the 32% who were not included. This should be addressed if the data are available but, if not, the potential for bias should be discussed. It is also unclear how many families were sent surveys as this could be another source of non-participant bias

VERSION 1 – AUTHOR RESPONSE

Manuscript: bmjpo-2022-001509 – "Mental Health of Children with Special Healthcare Needs and their Caregivers during COVID-19: A cross-sectional study" Freiburg, May 11th Dear Prof. Choonara, dear Dr. Flom and Dr. Spencer, Thank you very much for reviewing our manuscript entitled "Mental Health of Children with Special Healthcare Needs and their Caregivers during COVID-19: A cross-sectional study" and for providing very helpful comments. We hope that our modifications and replies below will address your comments sufficiently. Thank you very much, Dr. Anne Geweniger Editor in Chief Comments 1. Abstract results add actual numbers before % Reply: Thank you for pointing this out. We have added the actual numbers for parentreported child mental health problems and for caregivers screening positive for depression in the abstract. 2. I am not convinced that you need to amend the title as suggested by reviewer 2, but leave it up to you to decide Reply: Following the suggestions of reviewer 2, we have changed the manuscript title to "Mental Health of Children with and without Special Healthcare Needs and of their Caregivers during COVID-19: A cross-sectional study". Reviewer 1 Comments 1. I confine my remarks to statistical aspects of this paper. These were generally very well done. However, on p. 6 the authors say that model fit was assessed with R^2. There is no R^2 for logistic regression. There are various pseudo R^2 measures, but all of them have problems. I think this sentence could be dropped, or modified. Assessing model fit in logistic reg. is hard. Reply: Thank you very much for pointing this out. We have dropped the sentence accordingly. Reviewer 2 Comments This paper makes an important contribution to the literature on the impact of the COVID-19 pandemic on the mental health of children. The sequential cross-sectional design allowing the research group to monitor the pandemic's impact at different times is a particular strength plus the comparison of the impact on children with special health care needs (SHCN) with those with no SHCN. The statistical analysis is thorough and robust and the authors acknowledge limitations of the method such as the sampling strategy. In my view, the paper could be strengthened in the following ways: 1. The title refers exclusively to children with SHCN but a major strength of the paper is the comparison of the impact on SHCN and non-SHCN children. I suggest the title is changed to reflect this Reply: Thank you for highlighting this particular strength of our study. We have changed the manuscript title accordingly to "Mental Health of Children with and without Special Healthcare Needs and of their Caregivers during COVID-19: A cross-sectional study". 2. The authors recognize the problems of the self-selected sample which produced a nonrepresentative sample biased to high SES families; however, the potential bias the analysis of the relationship of child mental health with SES by underestimating the effect of low SES is not discussed. Reply: Thank you for mentioning this additional potential for bias in our analysis. We have modified the 'Limitations' section of the manuscript accordingly. 3. 68% of those accessing the survey were included in the final sample. Table 1 lists the characteristics of the final sample but there are no data on the characteristics of the 32% who were not included. This should be addressed if the data are available but, if not, the potential for bias should be discussed. It is also unclear how

many families were sent surveys as this could be another source of non-participant bias Reply: We thank reviewer 2 for pointing out this important aspect and are happy to provide further details. We have added a section in the main manuscript and more information in the supplement. N=641 participants met the inclusion criteria, i.e. having a child ≤18 years and consent to participate. Of those, n=120 were excluded for more than two missing values in the key variables SDQ total score, WHO-5 total score, CSHCN screener score and SES variables (monthly household income, occupation and education). There is no data available on the sociodemographic characteristics such as age, gender, relationship to the child or household income of those 120 respondents, as none of them completed the relevant section of the questionnaire. However, non-participation was equal among families with and without children with SHCN, with n=54 families with a SHCN child and n=59 families without a child with SHCN among the 120 excluded responses (n=7 missing). The mean age of their children was 7.7 years (SD 3.8), which is only slightly younger than the mean age of the children included in the study (8.4 years). Among the 120 excluded participants, n=41 discontinued their survey response in the first section on Children with Special Healthcare needs (30 items); n=33 accessed the survey and provided their consent, but did not continue their response after the first 10 items (age and number of children, CSHCN-screener). Reasons for discontinued participation might be the length of the survey, failure to capture aspects/topics relevant to both families with and without children with SHCN or the wording of the survey questions. Based on the available data we would assume that there was no systematic bias due to disease severity among non-respondents, as both families with and without children with SHCN were affected. As the survey link was promoted online through social media and free-access websites, and through our partner organisations, it unfortunately remains unclear, how many families received information about the study.

VERSION 2 – REVIEW

REVIEWER	Reviewer name: Dr. Nick Spencer Institution and Country: University of Warwick Warwick Medical School, United Kingdom of Great Britain and Northern Ireland Competing interests: None
REVIEW RETURNED	23-May-2022

GENERAL COMMENTS	The authors have responded appropriately to the comments in my initial review.