

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)	The Swedish Child Health Services Register – a quality register for child health services and children's well-being
AUTHORS	Wennergren, Mattias Berg, Karin Cavefors, Ann-Sofie Edin, Helena Ekholm, Leif Gelander, Lars Golsäter, Marie Hedman, Jennie Holmgren, Anton Karlsson Videhult, Frida Levin, Anna Silverdah, Sven Arne Wallby, Thomas Fäldt, Anna

VERSION 1 – REVIEW

REVIEWER	Reviewer name: Michaela Granfors Institution and Country: Karolinska Institute, Medicine, United Kingdom of Great Britain and Northern Ireland Competing interests: None
REVIEW RETURNED	16-Dec-2022

GENERAL COMMENTS	<p>BMJ Paediatrics Open, bmjpo-2022-001805</p> <p>The Swedish Child Health Services Register – a quality register for children's well-being and health equity</p> <p>Thank you for asking me to review the article, and thank you for the interesting manuscript!</p> <p>However, I have some general and detailed comments.</p> <p>Abstract (page 4 of 16)</p> <ul style="list-style-type: none"> - Background <ul style="list-style-type: none"> o What was the aim of the study? An aim should be stated. - Methods: <ul style="list-style-type: none"> o A specific, short description of the methods should be given (corresponding to the aim). Were data from the register compared to data from Statistics Sweden? - Results (also applicable to the result section in the manuscript): <ul style="list-style-type: none"> o Please specify the exact dates of the study period. Throughout the manuscript, the given dates are 2011-2022. But the year 2022 is not over yet. o Page 4, lines 23-24, and page 9, lines 45-46: Text in the manuscript: <i>The completeness of data differs between regions and birth cohorts. The average coverage for children born in 2021 is 71% (SD 32)</i> 1. 13 of the 21 regions in Sweden do not report data to BHVQ. Thus, it should be stated clearly that the average coverage for children born in 2021 is 71% in the eight reporting regions. The coverage for
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	<p>the whole country is obviously much lower.</p> <p>2. The coverage rates in the eight reporting regions in 2021 were 9%, 31%, 67%, 77%, 89%, 97%, 100% and 100%, respectively (table 1). Those frequencies are not normally distributed, and thus, it does not seem appropriate to use mean \pm SD for calculations. An SD of 32 does not seem reasonable (71% \pm SD 32 would imply that one SD means 39%-103%). Moreover, the SD on page 9, lines 45-46, is stated to be 37 instead of 32 in the abstract.</p> <p>- Conclusion: The Conclusion should be an answer to the aim (which should be stated)</p> <p>Some comments on the manuscript:</p> <p>Results (page 9)</p> <p>- Population, lines 6-10</p> <p>o Text in the manuscript: <i>The register includes all children aged 0-5 who have attended CHS and whose caregivers have not opted-out of participation.</i></p> <p>♣ Could you please clarify? Around 115 000 children have been born per year in Sweden in recent years, and most children are obviously not included in the register.</p> <p>o Table 1, page 10</p> <p>♣ It would be helpful to explain the columns</p> <ul style="list-style-type: none"> • Column 2, "start year and month": What does "start year and month" mean? Days and months are given, but no years • Column 4, "children living in the region N": Please clarify. Is "children living in the region N" = all children < 18 years (or < 6 years) living in the region during the respective year? Or all children born the respective year and living in the region? • Column 5, "children in the BHVQ N (%)", please explain, see "column 4" <p>Appendix 2</p> <p>- It would probably be easier for the reader to give time intervals in months and/ or years, as throughout the rest of the manuscript. Days (for example 1766-2100) could be given in brackets.</p> <p>Some general comments:</p> <p>It was very interesting to read about the Swedish health services and the BHVQ! Wonderful to read that the number of children in the register has increased in recent years.</p> <p>However, in my opinion, the manuscript would benefit from an improved and clearer structure, with a clear aim of the study (instead of describing the aim of the Swedish health services) and a clear description of the methods. The first part of the discussion should be a summary of the main results, and the conclusion should answer the aim of the study.</p> <p>I would also suggest an English revision.</p>
REVIEWER	<p>Reviewer name: Dr. Nick Spencer</p> <p>Institution and Country: University of Warwick Warwick Medical School, Division of Mental Health and Wellbeing, Gibbet Hill Road, Coventry, United Kingdom of Great Britain and Northern Ireland</p> <p>Competing interests: None</p>
REVIEW RETURNED	12-Dec-2022
GENERAL COMMENTS	<p>This paper aims to describe the data available in the Swedish Child Health Services Register (BHVQ) and its completeness. Further, the title of the paper describes the Register as 'a quality register for children's well-being and health equity'. The Swedish Child Health Services (CHS) are known to have a high level of coverage and uptake especially in the first year of life. They are based on the</p>

	<p>principle of proportional universalism and on the articles of the UN Convention on the Rights of the Child.</p> <p>The development of a register to monitor and evaluate the CHS is a potentially valuable contribution to the health and well-being of Swedish children; however, I have some issues I don't think are adequately addressed in the paper.</p> <p>1. Validity of the indicators</p> <p>Indicators collected in the BHVQ include audiology and ophthalmic screening which have a robust evidence-base but, according to the comprehensive evidence reviews undertaken by the UK National Screening Committee, screening for postnatal depression using the Edinburgh Postnatal Depression Scale (EPDS) [1], developmental assessment/screening [2], speech and language delay screening [3], and screening for obesity under 5 years of age [4] do not satisfy the criteria for reliable screening tests. If, as the evidence suggests, the results of these screening and surveillance procedures are unreliable as true measures of the health of Swedish children then this will threaten the validity of the BHVQ as a quality measure for children's well-being and equity. The authors need to address the issue of validity of the indicators</p> <p>2. Selection of indicators</p> <p>The authors state (p.6 lines 46-7) that the BHVQ was 'the result of a multi-year national effort among interprofessional to identify and define quality indicators for preventive child health care'. However, the paper gives no indication of how the 21 variables were selected and the evidence supporting their inclusion. Reference 4, cited on line 57, p.6, appears to relate to the selection but I was unable to access it. An alternative citation is needed.</p> <p>3. Indicators of health equity</p> <p>The title of the paper refers to children's well-being and health equity. Notwithstanding the concerns about the validity of some of the indicators, the register is likely provide valuable data on some aspects of the health and well-being of the Swedish child population but it is not clear what indicators of health equity will be monitored. In fact, other than the reference to health equity in the title, there is no further mention of it in the paper. If the title is unchanged, then the monitoring of equity should be addressed in the paper</p> <p>4. Results</p> <p>Figure 1 suggests that the number of children in the register in each annual birth cohort has increased year on year. It would be useful to have the percentage of the total birth cohort registered not just the crude figures. That would give the reader a clearer idea of the increasing coverage by each whole Swedish population birth cohort. Tables 1 gives some indication of this but is stratified by region and total population coverage by birth cohort is not given. It is striking that Stockholm has such consistently low coverage and it would be interesting to have some explanation of this in the records. Table 2 is potentially the most interesting as it relates to the individual indicators in the register but there is no discussion of these findings – for example, is the fall from 72% of infants breast fed to 4 months in 2015 to 68% in 2021 statistically significant and/or an indication of changing feeding habits? There also appears to be decline in mothers and particularly fathers smoking when the infant is 8 months old. Is this a real trend or an artefact?</p> <p>5. Discussion</p> <p>The discussion is disappointingly limited and entirely Swedish-centred. There is no acknowledgement that there are many different models of well child health care and data collection methods. Equity is not considered and the weak evidence-base for screening is not addressed.</p> <p>In summary, the development of the register is a positive step but I don't think the paper in its present form does it justice. In my view, the authors need to consider the above issues if the paper is to make a valuable contribution to the literature on monitoring child health and well-being and health equity.</p>
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	<p>[1] Screening for antenatal and postnatal mental health problems: External review against programme appraisal criteria for the UK National Screening Committee, April 2019. https://view-health-screening-recommendations.service.gov.uk/postnatal-depression/</p> <p>[2] UK National Screening Committee, Child Health Sub-Group Report on Developmental and Behavioural problems, May 2005. https://view-health-screening-recommendations.service.gov.uk/development-behaviour/</p> <p>[3] UK National Screening Committee Child Health Sub-Group Report on Speech and Language delay, May 2005. https://view-health-screening-recommendations.service.gov.uk/speech-language-delay/</p> <p>[4] UK National Screening Committee. Screening for obesity in children ≤5 years: External review against programme appraisal criteria for the UK National Screening Committee (UK NSC), 2018 Update. https://view-health-screening-recommendations.service.gov.uk/obesity/</p>
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VERSION 1 – AUTHOR RESPONSE

3rd of January 2023

bmjpo -2022-001805

The Swedish Child Health Services Register – a quality register for child health services and children’s well-being

Thank you for the opportunity to revise our manuscript entitled The Swedish Child Health Services Register – a quality register for child health services and children’s well-being.

The reviewers’ recommendations were constructive, and we believe the revisions have improved the manuscript. We answer the reviewers’ comments point-by-point below. A version with the changes marked (in yellow highlight) is submitted alongside the resubmitted manuscript. The given page numbers refer to the PDF document produced by the online system.

Reviewer: 1

1. Validity of the indicators

Indicators collected in the BHVQ include audiology and ophthalmic screening which have a robust evidence-base but, according to the comprehensive evidence reviews undertaken by the UK National Screening Committee, screening for postnatal depression using the Edinburgh Postnatal Depression Scale (EPDS) [1], developmental assessment/screening [2], speech and language delay screening [3], and screening for obesity under 5 years of age [4] do not satisfy the criteria for reliable screening tests. If, as the evidence suggests, the results of these screening and surveillance procedures are unreliable as true measures of the health of Swedish children then this will threaten the validity of the BHVQ as a quality measure for children’s well-being and equity. The authors need to address the issue of validity of the indicators

Answer:

Thank you for this vital and constructive comment. The indicators in BHVQ are based upon the Swedish national programme of child health services¹ and the methods used in the child health services. Many of these are used as health surveillance methods where the nurse combines the knowledge gained by these methods and through frequent contact with the families as recommended in previous research regarding child health services.² Even though the evidence for several of these methods is limited, they have been used for decades. The BHVQ can work as an instrument to evaluate and develop methods in child health services. We have added a discussion regarding the limited evidence of the child health programme in the discussion. (Page 11, line 33)

2. Selection of indicators

The authors state (p.6 lines 46-7) that the BHVQ was ‘the result of a multi-year national effort among interprofessional to identify and define quality indicators for preventive child health care’. However, the paper gives no indication of how the 21 variables were selected and the evidence supporting their

inclusion. Reference 4, cited on line 57, p.6, appears to relate to the selection but I was unable to access it. An alternative citation is needed.

Answer:

The indicators used in BHVQ, as mentioned above, mirror the child health service in Sweden. The indicators were selected based on the knowledge and experience of the individuals in the register board at the time of the development of BHVQ, from ca 2005 to 2013. In recent years two indicators has been added, vaccinations and individual conversation with the non-birth-giving caregiver. BHVQ can add and/or subtract indicators suggested by the Swedish National system for knowledge-driven management within Swedish healthcare, which BHVQ is a part of. The Swedish National system for knowledge-driven management within Swedish healthcare 3, has been developed during the last three years. In the National system for knowledge-driven management BHVQ's role is to evaluate and deliver data to be able to follow the national program nationwide. We have added information of BHVQ's role and the Swedish National system for knowledge-driven management within Swedish healthcare. (Page 6, line 54)

3. Indicators of health equity

The title of the paper refers to children's well-being and health equity. Notwithstanding the concerns about the validity of some of the indicators, the register is likely provide valuable data on some aspects of the health and well-being of the Swedish child population but it is not clear what indicators of health equity will be monitored. In fact, other than the reference to health equity in the title, there is no further mention of it in the paper. If the title is unchanged, then the monitoring of equity should be addressed in the paper.

Answer: We have altered the title of the paper and adjusted the manuscript, as suggested. (Page 3, line 5)

4. Results

Figure 1 suggests that the number of children in the register in each annual birth cohort has increased year on year. It would be useful to have the percentage of the total birth cohort registered not just the crude figures. That would give the reader a clearer idea of the increasing coverage by each whole Swedish population birth cohort. Tables 1 gives some indication of this but is stratified by region and total population coverage by birth cohort is not given.

Answer: We have created a new table, with percentage for the birth cohorts and deleted figure 1. The birth cohort of 2022 Statistics Sweden have yet to completed the data set. (Page 9, line 13)

It is striking that Stockholm has such consistently low coverage and it would be interesting to have some explanation of this in the records.

Answer: We have clarified that only one healthcare provider in Stockholm delivers data to BHVQ. During 2023 remaining providers in the region will deliver data. We have added information in the manuscript (Page 9, line 57)

Table 2 is potentially the most interesting as it relates to the individual indicators in the register but there is no discussion of these findings – for example, is the fall from 72% of infants breast fed to 4 months in 2015 to 68% in 2021 statistically significant and/or an indication of changing feeding habits? There also appears to be decline in mothers and particularly fathers smoking when the infant is 8 months old. Is this a real trend or an artefact?

Answer: We agree, we would like to analyse and discuss the data presented in table 2. However, with this paper, we aim to describe data available in the Swedish Child Health Services Register (BHVQ) and completeness of data in BHVQ. This information is added in the discussion (Page 12, line 3)

Reviewer 2:

Abstract (page 4 of 16)

- Background

o What was the aim of the study? An aim should be stated.

Answer: We have added the aim in the abstract

- Methods:

o A specific, short description of the methods should be given (corresponding to the aim). Were data

from the register compared to data from Statistics Sweden?

Answer: We have clarified the information regarding the method in the abstract.

- Results (also applicable to the result section in the manuscript):

o Please specify the exact dates of the study period. Throughout the manuscript, the given dates are 2011-2022. But the year 2022 is not over yet.

Answer: We have altered all the tables and data in the manuscript, including all of 2022.

o Page 4, lines 23-24, and page 9, lines 45-46:

Text in the manuscript: *The completeness of data differs between regions and birth cohorts. The average coverage for children born in 2021 is 71% (SD 32)*

1. *13 of the 21 regions in Sweden do not report data to BHVQ. Thus, it should be stated clearly that the average coverage for children born in 2021 is 71% in the eight reporting regions. The coverage for the whole country is obviously much lower.*

Answer: We have replaced figure 1 with a new table 1, including national coverage as suggested. (page 9, line 13)

2. *The coverage rates in the eight reporting regions in 2021 were 9%, 31%, 67%, 77%, 89%, 97%, 100% and 100%, respectively (table 1). Those frequencies are not normally distributed, and thus, it does not seem appropriate to use mean \pm SD for calculations. An SD of 32 does not seem reasonable (71% \pm SD 32 would imply that one SD means 39%-103%). Moreover, the SD on page 9, lines 45-46, is stated to be 37 instead of 32 in the abstract.*

Answer: Thank you for this important comment. We have excluded the SD throughout the manuscript.

- Conclusion: The Conclusion should be an answer to the aim (which should be stated)

Answer: We have altered the conclusion as suggested.

Some comments on the manuscript:

Results (page 9)

- Population, lines 6-10

o Text in the manuscript: *The register includes all children aged 0-5 who have attended CHS and whose caregivers have not opted-out of participation.*

♣ *Could you please clarify? Around 115 000 children have been born per year in Sweden in recent years, and most children are obviously not included in the register.*

Answer: We have added information regarding the population as suggested.

o Table 1, page 10

It would be helpful to explain the columns

• Column 2, "start year and month": *What does "start year and month" mean? Days and months are given, but no years*

• Column 4, "children living in the region N": *Please clarify. Is "children living in the region N" = all children < 18 years (or < 6 years) living in the region during the respective year? Or all children born the respective year and living in the region?*

• Column 5, "children in the BHVQ N (%)", *please explain, see "column 4"*

Answer: We have reworked the column headings.

Appendix 2

- *It would probably be easier for the reader to give time intervals in months and/ or years, as throughout the rest of the manuscript. Days (for example 1766-2100) could be given in brackets.*

Answer: We have altered the appendix as suggested.

Some general comments:

It was very interesting to read about the Swedish health services and the BHVQ! Wonderful to read that the number of children in the register has increased in recent years.

However, in my opinion, the manuscript would benefit from an improved and clearer structure, with a clear aim of the study (instead of describing the aim of the Swedish health services) and a clear description of the methods. The first part of the discussion should be a summary of the main results, and the conclusion should answer the aim of the study.

I would also suggest an English revision.

Answer: Thank you for your constructive feedback, we have worked through the manuscript as suggested.

1. Reuter A. Barnhälsovårdens nationella program . Metoder och riktlinjer, <https://www.rikshandboken-bhv.se/metoder--riktlinjer/barnhalsovardens-nationella-program/> (2018, accessed 2020-08-20 2020).
2. Glascoe FP. Screening for developmental and behavioral problems. *Mental Retardation and Developmental Disabilities Research Reviews* 2005; 11: 173-179. DOI: 10.1002/mrdd.20068.
3. Sveriges Kommuner och Regioner. National system for knowledge-driven management within Swedish healthcare, <https://kunskapsstyrningvard.se/kunskapsstyrningvard/omkunskapsstyrning/nationalsystemforknowledgedrivenmanagementwithinswedishhealthcare.56857.html> (accessed January 3 2023).

VERSION 2 – REVIEW

REVIEWER	Reviewer name: Institution and Country: Competing interests:
REVIEW RETURNED	

GENERAL COMMENTS	
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REVIEWER	Reviewer name: Institution and Country: Competing interests:
REVIEW RETURNED	

GENERAL COMMENTS	
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REVIEWER	Reviewer name: Institution and Country: Competing interests:
REVIEW RETURNED	

GENERAL COMMENTS	
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VERSION 2 – AUTHOR RESPONSE

VERSION 3 – REVIEW

REVIEWER	Reviewer name: Institution and Country: Competing interests:
REVIEW RETURNED	

GENERAL COMMENTS	
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REVIEWER	Reviewer name: Institution and Country: Competing interests:
REVIEW RETURNED	

GENERAL COMMENTS	
REVIEWER	Reviewer name: Institution and Country: Competing interests:
REVIEW RETURNED	
GENERAL COMMENTS	

VERSION 3 – AUTHOR RESPONSE