

RESEARCH NOTE

Open Access



How do responses vary between mothers and their daughters on measuring daughter's self-rated health (SRH): a study among school-going adolescent girls in the primary setting of Varanasi, India

Ratna Patel* and Dhananjay W. Bansod

Abstract

Objective: How self-rated health (SRH) varies when the response on SRH is recorded from the respondent herself (adolescent girl) and her mother on her behalf. This study examines the prevalence of SRH among adolescent girls from her point of view as well as from her mother's point of view. This insight could help us interpret the differences in opinion of girls and their mothers while measuring the girls' self-rated health.

Results: Almost one-fifth (19.4%) of the girls reported poor SRH. In contrast, only one in eight mothers (12.3%) could report their daughters under the category of poor SRH. Nearly one-third (76.5%) of the mothers reported their daughter's SRH as good when daughters themselves rated poorly on SRH and another one-tenth (9.6%) reported their daughter's SRH as poor when daughters themselves categorized in the good SRH category [$\chi^2 = 9.900$; $p < 0.002$]. More than 90 percent of the Rich and Middle wealth index women, women in the household with only daughters and no son, women whose husbands had higher education, women with higher secondary education, and non-working women visualized their daughter's SRH as good when daughters themselves reported poor SRH.

Keywords: Self-rated health, Opinion difference, Adolescents, India

Introduction

There is a widespread consensus in the available literature that self-rated health (SRH), measured as a one-item general health question, is one of the important health indicators with widespread applicability [1, 2]. Despite its widespread applicability, hardly any other measure of health is more poorly understood than self-rated health [1]. This measure is based on asking individuals to evaluate their health status and is being frequently employed

in sociological health research since the 1950s [2–4]. The question on self-rated health is so prominent that the data on SRH are collected in major national and international surveys including World Value Survey, European value Survey, and Longitudinal Ageing Study in India, and recommended as a standard part of health surveys [5].

Self-rated health is a well-known and reliable indicator to measure the health status of the population [6], even in India [7, 8]. It has been studied widely across countries [9–17] and sub-populations including older adults [18–24], adults [25–28], and adolescents [29–33]. Somehow, studies examining factors associated with self-rated health among adolescents remained unearthed

*Correspondence: ratnapatelbhu@gmail.com

Department of Public Health and Mortality Studies, International Institute for Population Sciences, Mumbai, India



topic in the Indian context. Furthermore, how self-rated health varies when the response was recorded from the respondent herself (adolescent girl) and was asked from her mother on her behalf. This study is unique in the sense that the self-rated health was asked from adolescent girls and their mothers depicting the possible discordant between a mother and her daughter. Therefore, this study examines the prevalence of self-rated health among adolescent girls from her point of view as well as from her mother’s point of view. This insight could help us interpret the differences in opinion of girls and their mothers while measuring the girls’ self-rated health and also presents possible correlates of poor self-rated health among adolescent girls.

Main text

Data and methods

This study is based on the primary data collected in the Varanasi district of Uttar Pradesh, India, from October 2019 to February 2020. Nearly 350 adolescent girls and their mothers were personally interviewed. The purpose of the primary survey was to examine the self-rated health status of the adolescent girls and then compare the response with that of mothers’. While framing the question on self-rated health, it was hypothesized that mothers might not be well informed about their daughter’s self-rated health and therefore any deviation between the responses of mothers and daughters on self-rated health would provide discordance in mothers’ responses on self-rated health.

Sample size estimation

The adolescent consists of children in the age group 10–19 years of age. Adolescent can be divided into three various groups based on their age group namely; early adolescent (10–12 years), middle adolescent (13–16 years), and late adolescent (17–19 years). This study is based on middle and late-adolescent girls. The study was conducted on school-going girls (8th standard to 12th standard) in the age group between 13 and 19 years of age.

For taking prevalence, the number of literate girls in the urban area of Varanasi, as per census 2011, in the age group 13–19 are taken as the numerator and total girls in the age group 13–19 are taken as the denominator.

$$p = \frac{\text{Number of literate girls in the age group 13–19 years in urban Varanasi}}{\text{Total girls in the age group 13–19 years in urban Varanasi}} * 100,$$

$$p = \frac{103373}{120986} * 100,$$

$$p = 85.44.$$

The sample size estimation for the study is done by using the formula developed by Cochran (1977). The formula is as follows:

$$n = \frac{(z)^2 * p * q}{(d)^2}$$

where, n=Required Sample Size; Z=1.96 (95% level of confidence); p=0.8544; q=0.1456.

$$\alpha = 0.05 \text{ (5\% margin of error); } n = 191.$$

By taking a non-response rate of 10 percent and a design effect of 1.5, the sample size was to be:

$$n = 211 * 1.1 * 1.5 = 315 \text{ Individuals}$$

So, nearly **350 adolescent girls** from the school were interviewed.

Sampling design

Varanasi district is subdivided into five zones for ease of administration. A total of ten schools were selected, two from each zone (Wards). Out of ten schools, five public and five private schools were selected. Two schools, one public, and one private school were selected from each zone (wards). From each school, a total of 35 students were interviewed. These 35 students were selected from classes 8–12th. From each class, 7 students were selected for the interview.

Selection of school

Varanasi city is divided into five zones and zones are further divided into wards. One ward was selected from each zone randomly. After selecting five wards, one from each zone, a complete public, and private school listing was carried out. Two schools, one private and one public school were selected from each ward randomly. If in case, a ward is not having either of public or private school, the next ward was selected randomly. If in case, a school is not interested in participating in the study, the next school was selected randomly.

Selection of respondents from school

From each class, seven students were selected by employing systematic random sampling. For sampling, a complete list of students was taken from the class

attendance register. The mothers of the selected student were personally interviewed in their households.

Inclusion criteria

1. Girls aged 13–19 years of age; and
2. Girls studying in class from 8 to 12th.

Exclusion criteria

1. Disabled girls were not interviewed; and
2. Those girls whose mothers are not alive were not interviewed.

Outcome variable

Self-rated health was the primary outcome variable of this study. SRH was a dichotomous variable where 0 means 'Good SRH' and 1 means 'Poor SRH'. The exact wording of the question asked from the adolescent girls was "In general, how would you say your health is?" Similarly, the exact wording of the question asked from the mothers of adolescent girls was "In general, how would your daughter rate her health?" In both scenario, the SRH of the girl was asked, however from a different perspective. In the first case, a girl herself is reporting her SRH and in the second case, her mother is visualizing the SRH on her behalf. By doing so, we aimed at quantifying the mismatch in the response of SRH between mothers and their daughters.

Exposure variable

Exposure variables were divided into three groups; (1) Household Characteristics; Caste [Scheduled Castes/Scheduled Tribes (SC/ST), Others Backward Castes (OBC), and Others], Religion (Hindu and Non-Hindu), Wealth Index (Poorest, Poor, Middle, Rich, and Richest), and Composition of Children (Only daughter/no son, equal son and daughter, more son/less daughter, and more daughter/less son); (2) Parental characteristics; Father's education level (No education, Primary, Secondary, Higher Secondary, and Higher Study), Mother's education level (No education, Primary, Secondary, Higher Secondary, and Higher Study), Working status of father (Working and Not working), and Working status of mother (Working and Not working); and (3) Adolescent girl's characteristics; Girl's education level (8–10th and 11–12th) and Age of the girl (13–15 years, and 16–19 years).

Statistical analysis

The study uses bivariate analysis; and to depict the significance, a chi-square test was performed.

Ethical issues

The study proposal and survey questionnaires were approved by the Student Research Ethics Committee

(SREC) of the institute. Written consent was taken from the individual respondents. Participation in the study was made voluntary, and participants were allowed to withdraw at any point during the interview if desired. Additional files 1 and 2 presents the adolescents' and mothers' questionnaires respectively.

Results

Table 1 depicts the percentage distribution of the sample by selected background variables along with depicting the prevalence of poor SRH as reported by girls and as visualized by their mothers by background characteristics. Almost one-fifth (19.4%) of the girls reported poor SRH for them. In contrast, only one in eight mothers (12.3%) could visualize their daughters under the category of poor SRH. Reporting of poor SRH varies between girls and their mothers by almost all the background characteristics as depicted in Table 1. The stark differences in reporting SRH by girls and their mothers were noticed for higher wealth index and higher educational categories.

Table 2 depicts the discordance in SRH as reported by girls and their mothers. Nearly one-third (76.5%) of the mothers visualized their daughter's SRH as good when daughters themselves rated poorly on SRH and another one-tenth (9.6%) visualized their daughter's SRH as poor when daughters themselves categorized in the good SRH category.

Table 3 shows the response of mothers on visualizing the SRH of their daughters when their daughters rated their SRH as poor. A significant proportion of mothers from all the given background characteristics visualized their daughter's SRH as good when daughters themselves rated poorly on SRH. More than 90% of the Rich and Middle wealth index women, women in the household with only daughters and no son, women whose husbands had higher education, women with higher secondary education, and non-working women visualized their daughter's SRH as good when daughters themselves reported poor SRH.

Discussion

This study examined the SRH among school-going adolescent girls by adopting a unique approach: probing the self-rated health of the girls by girls and their mothers. Firstly, a girl was asked to rate her health as either good or poor and then her mother was asked about how her daughter would rate her health. By doing so, this study explored the possible perception of mothers on how well they understand their daughter's health. The study noticed that a significant proportion of mothers failed to understand their daughter's perception of self-rated

Table 1 Percentage distribution of the selected sample of the girls, bivariate distribution of SRH as reported by adolescent girls and their mothers, and difference in reporting in SRH by girls and their mothers

Column A Background Characteristics	Column B Total sample N (%)	Column C Poor SRH as reported by girls (%)	Column D Poor SRH as reported by girl's mothers (%)	Column E Absolute Difference in SRH (Girl's SRH- mother's SRH) (Column C – ColumnD)	Column F Percent change (Girl's SRH- mother's SRH/ mother's SRH) *100 (Column E/Column D)*100
Household characteristics					
Caste					
SC/ST	69 (19.7)	24 (34.8)	21 (30.4)	4.4	14.5
OBC	170 (48.6)	26 (15.3)	17 (10)	5.3	53.0
Others	111 (31.7)	18 (16.2)	5 (4.5)	11.7	260.0
Religion					
Hindu	271 (77.4)	52 (19.2)	28 (10.3)	8.9	86.4
Non-Hindu	79 (22.6)	16 (20.3)	15 (19.0)	1.3	6.8
Wealth index					
Poorest	67 (19.1)	24 (35.8)	26 (38.8)	– 3.0	– 7.8
Poor	73 (20.9)	12 (16.4)	9 (12.3)	4.1	33.33
Middle	70 (20.0)	8 (11.4)	1 (1.4)	10	714.3
Rich	69 (19.7)	11 (15.9)	3 (4.4)	11.5	261.4
Richest	71 (20.3)	13 (18.3)	4 (5.6)	12.7	226.8
Composition of children					
Only daughter/ no son	39 (11.1)	2 (5.1)	5 (12.8)	– 7.7	– 60.2
Equal son and daughter	126 (36.0)	31 (24.6)	16 (12.7)	11.9	93.7
More son/less daughter	117 (33.4)	18 (15.4)	11 (9.4)	6	63.8
More daughter/less son	68 (19.4)	17 (25.0)	11 (16.2)	8.8	54.3
Parental characteristics					
Father education					
No education	53 (15.4)	12 (22.6)	13 (24.5)	– 1.9	– 7.8
Primary	54 (15.7)	16 (29.6)	11 (20.4)	9.2	45.1
Secondary	67 (19.4)	11 (16.4)	7 (10.5)	5.9	56.2
Higher secondary	65 (18.8)	10 (15.4)	9 (13.9)	1.5	10.8
Graduation and above	106 (30.7)	18 (17.0)	3 (2.8)	14.2	507.1
Mother education					
No education	97 (27.7)	27 (27.8)	16 (16.5)	11.3	68.5
Primary	59 (16.9)	6 (10.2)	6 (10.2)	0	0
Secondary	78 (22.3)	18 (23.1)	14 (18.0)	5.1	28.3
Higher secondary	83 (23.7)	13 (15.7)	5 (6.0)	9.7	161.7
Graduation and above	33 (9.4)	4 (12.1)	2 (6.1)	6	98.4
Working status of Father ^a					
Working	334 (96.8)	63 (18.9)	43 (12.9)	6	46.5
Not working	11 (3.2)	4 (36.4)	0 (0.0)	36.4	^b
Working status of Mother					
Working	39 (11.1)	8 (20.5)	4 (10.3)	10.2	99.0
Not working	311 (88.9)	60 (19.3)	39 (12.5)	6.8	54.4
Adolescent girl's characteristics					
Girl's Educ.					
8–10th	210 (60.0)	41 (19.5)	25 (11.9)	7.6	63.9
11–12th	140 (40.0)	27 (19.3)	18 (12.9)	6.4	49.6

Table 1 (continued)

Column A Background Characteristics	Column B Total sample N (%)	Column C Poor SRH as reported by girls (%)	Column D Poor SRH as reported by girl’s mothers (%)	Column E Absolute Difference in SRH (Girl’s SRH- mother’s SRH) (Column C – ColumnD)	Column F Percent change (Girl’s SRH- mother’s SRH/ mother’s SRH) *100 (Column E/Column D)*100
Age of the girl					
13–15 years	181 (51.7)	36 (19.9)	20 (11.1)	8.4	75.7
16–19 years	169 (48.3)	32 (18.9)	23 (13.6)	5.3	41.2
Total	350 (100)	68 (19.4)	43 (12.3)	7.1	57.7

SRH self-rated health, SC scheduled caste, ST scheduled tribe, OBC: other backward class

^a Total is not 350 as fathers were not alive in these households

^b Value is not available as category of non-working father has no sample for column D

Table 2 Discordance in SRH as reported by daughters and their mothers

SRH from daughter’s perspective	SRH from mother’s perspective			Chi-square value
	Good SRH	Poor SRH	Total	
Good SRH	255 (90.4%)	27 (9.6%)	282 (100%)	$\chi^2 = 9.900$; $p < 0.002$
Poor SRH	52 (76.5%)	16 (23.5%)	68 (100%)	
Total	307 (87.7%)	43 (12.3%)	350 (100%)	

SRH self-rated health

health. It is significantly evident from the findings that a large proportion of mothers visualized their daughter’s SRH as good when daughters themselves were categorized poorly on SRH. What could be the possible mechanisms and why mothers fail to recognize the health condition of their daughters is worth probing.

Family bonds have been characterized as an asset in health promotion intervention [34] and studies in the Indian context have clearly outlined the gender biases in the family towards the female gender from a health perspective [35]. This biasedness towards the female gender could be a possible attribute why mothers fail to correctly percept the poor SRH of their daughters as outlined in this study. In line with this discussion, the study also noted that in the case of an equal number of sons and daughters in the household, a significant proportion of mothers tend to visualize their daughter’s SRH as good when the daughter reported poor SRH. This finding weighs on a longstanding debate of gender inequality in households disfavoring females. There could also be another possible reason why mothers think that their daughters would rate their health as good when daughters rated their health as poor. Lundberg et al. [36] opined that boys as compared to girls are more likely to reap financial and emotional benefits from their parents, and

this could be one of the plausible factors why in this study mothers failed to visualize poor SRH of their daughters.

A higher proportion of mothers from rich wealth quintile and higher education status visualized their daughters’ SRH as good when daughters reported poor SRH. Highly educated mothers belonging to the rich wealth quintile are more likely to work and their career might demand long work hours leading to negligence in child care [37] and thereby it can be inferred that they might not be well aware of their daughter’s SRH as depicted in this study. Luthar and Latendresse [37] called this an antecedent of ‘isolation from adults’ where among upper-middle-class families, adolescent children often left home alone for several hours each week, giving a sense of self-sufficiency to parents that could have several emotional repercussions to children. Social support from family, specific parents, plays an imperative role in the life of the adolescents and also is a critical factor for them to rate their self-rated health [38], and it is understood that in affluent families children might feel neglected [39]. This feeling of neglect might have driven adolescents to rate their health as poor, while mothers might be under the impression that belonging to the rich wealth quintile automatically helps them to visualize their daughter’s health as good.

Conclusion

A mother’s knowledge about children’s health is impromptu to the quality of care she provides to her children and therefore it becomes critical to seek improvements in mother’s involvement in the healthcare needs of their children. This study clearly outlined that mothers failed to visualise correct SRH for their daughters as discrepancies were noticed between mothers visualizing their daughter’s SRH and reporting of SRH by daughters themselves. The involvement of mothers in visualizing

Table 3 Response of mothers on SRH when daughters reported poor SRH for themselves by various background characteristics

Background Characteristics	Good SRH	Poor SRH	Chi-square value
Household characteristics			
Caste			
SC/ST	58.3	41.7	$\chi^2 = 2.198; p < 0.139$
OBC	84.6	15.4	$\chi^2 = 0.9888; p < 0.320$
Others	88.9	11.1	$\chi^2 = 2.1799; p < 0.140$
Religion			
Hindu	75.0	25.0	$\chi^2 = 14.94; p < 0.00$
Non-Hindu	81.2	18.8	$\chi^2 = 0.007; p < 0.978$
Wealth index			
Poorest	58.3	41.7	$\chi^2 = 0.1289; p < 0.720$
Poor	75.0	25.0	$\chi^2 = 2.133; p < 0.144$
Middle	100.0	0.0	$\chi^2 = 0.1309; p < 0.717$
Rich	90.9	9.1	$\chi^2 = 0.708; p < 0.400$
Richest	84.6	15.4	$\chi^2 = 2.846; p < 0.092$
Composition of children			
Only daughter/no son	100.0	0.0	$\chi^2 = 0.310; p < 0.578$
Equal son and daughter	71.0	29.0	$\chi^2 = 9.895; p < 0.002$
More son/less daughter	83.3	16.7	$\chi^2 = 1.318; p < 0.251$
More daughter/less son	76.5	23.5	$\chi^2 = 0.904; p < 0.342$
Parental Characteristics			
Father education			
No education	66.7	33.3	$\chi^2 = 0.649; p < 0.420$
Primary	56.3	43.7	$\chi^2 = 7.662; p < 0.006$
Secondary	72.7	27.3	$\chi^2 = 3.982; p < 0.046$
Higher Secondary	90.0	10.0	$\chi^2 = 0.147; p < 0.702$
Graduation and above	94.4	5.6	$\chi^2 = 0.587; p < 0.444$
Mother education			
No education	74.1	25.9	$\chi^2 = 2.416; p < 0.120$
Primary	83.3	16.7	$\chi^2 = 0.309; p < 0.579$
Secondary	66.7	33.3	$\chi^2 = 3.761; p < 0.052$
Higher Secondary	92.3	7.7	$\chi^2 = 0.076; p < 0.783$
Graduation and above	75.0	25.0	$\chi^2 = 2.868; p < 0.090$
Working status of Father ^a			
Working	74.6	25.4	$\chi^2 = 0.550; p < 0.815$
Not working	100.0	a*	a**
Working status of Mother			
Working	87.5	12.5	$\chi^2 = 0.550; p < 0.815$
Not working	75.0	25.0	$\chi^2 = 10.523; p < 0.001$
Adolescent girl's characteristics			
Girl's Educ.			
8–10th	78.1	21.9	$\chi^2 = 4.903; p < 0.027$
11–12th	74.1	25.9	$\chi^2 = 5.099; p < 0.024$
Age of the girl			
13–15 years	77.8	22.2	$\chi^2 = 5.707; p < 0.017$
16–19 years	75.0	25.0	$\chi^2 = 4.356; p < 0.037$

Table 3 (continued)

Background Characteristics	Good SRH	Poor SRH	Chi-square value
Total	52 (76.5)	16 (23.5)	$\chi^2 = 9.900; p < 0.002$

Numbers in each column depicts percentage of Good SRH and Bad SRH
 SRH self-rated health, SC scheduled caste, ST scheduled tribe, OBC other backward class

^a It depicts that the total number of fathers is not 350 as in some households, fathers were not alive

^a *Due to non of the sample falling in the respective categories, values is not available

^a **Chi-square value is not available as the corresponding category of variable does not have any sample for non-working class of fathers

children's health shall be promoted to avoid any serious complications. Mother-daughter relationships may be a potential asset to promote good self-rated health among adolescent girls. It is highly desirable to educate mothers on the importance of self-rated health of their daughters and therefore the importance of the mother-daughter relationship as a locus for health promotion is critical.

Strengths of the study

We could not find a single study that examined the discordance in the perception of self-rated health between daughters and their mothers in the Indian context. That way, this is quite an untouched domain and may pave the way for future research. The response of daughters and their mothers on SRH were collected following the guidelines of the widely used KIDSCREEN-52 scale.

Limitations of the study

Despite above-mentioned strengths, the study has some potential limitations. The study findings shall not be generalized at the national-level as the data were collected from one district only. Since SRH was a self-reported outcome, it might be affected by social bias and conformity.

Abbreviations

SC/ST: Scheduled castes/scheduled tribes; OBC: Other backward class; SRH: Self-rated health.

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s13104-022-06174-1>.

Additional file 1. Structured schedule for adolescent girls.

Additional file 2. Structured schedule for mothers.

Acknowledgements

Authors are thankful to the study participants for providing the valuable data. Authors are also thankful to David Jean Simon, Paris 1 Pantheon Sorbonne University, for copyediting this manuscript.

Author contributions

The concept was drafted by RP. RP contributed to the analysis design. DWB advised on the paper and assisted in paper conceptualization. RP contributed in the comprehensive writing of the article. DWB edited the manuscript. RP reviewed the manuscript. Both authors read and approved the final manuscript.

Funding

Authors did not receive any funding to carry out this research.

Availability of data and materials

The datasets generated and/or analysed during the current study are not publicly available as this data is a part of corresponding author's PhD research work and it was collected by corresponding author to receive the PhD degree, but are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

This study is based on primary data collected by the first author herself. The ethical approval was granted by the Student Research Ethics Committee of the International Institute for Population Sciences, Mumbai, India. Furthermore, the signed consent to participate was taken from each of the respondent. Also, in case of the respondents being minor, the written informed consent was also taken from their mothers. Besides, the informed consent was also taken from the head/principal of the school in which the adolescent girls were studying at the time of the survey.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

Received: 16 March 2022 Accepted: 25 August 2022

Published online: 05 September 2022

References

- Jylhä M. What is self-rated health and why does it predict mortality? Towards a unified conceptual model. *Soc Sci Med.* 2009;69(3):307–16. <https://doi.org/10.1016/j.socscimed.2009.05.013>.
- Garrity TF, Somes GW, Marx MB. Factors influencing self-assessment of health. *Soc Sci Med Part Med Psychol Med Sociol.* 1978;12:77–81.
- Maddox GL. "Some correlates of differences in self-assessment of health status among the elderly." *J Gerontol.* 1962. <https://doi.org/10.1093/geronj/17.2.180>.
- Suchman EA, Phillips BS, Streib GF. An analysis of the validity of health questionnaires. *Soc Forces.* 1957;36:223–32.
- Robine JM, Jagger C, E-R Group. Creating a coherent set of indicators to monitor health across Europe: the Euro-REVES 2 project. *Eur J Public Health.* 2003;13(suppl_3):6–14.
- Lundberg O, Manderbacka K. Assessing reliability of a measure of self-rated health. *Scand J Soc Med.* 1996;24(3):218–24.
- Cullati S, Mukhopadhyay S, Sieber S, Chakraborty A, Burton-Jeangros C. Is the single self-rated health item reliable in India? A construct validity study. *BMJ Glob Health.* 2018;3(6): e000856. <https://doi.org/10.1136/bmjgh-2018-000856>.
- Subramanian SV, Subramanyam MA, Selvaraj S, Kawachi I. Are self-reports of health and morbidities in developing countries misleading? Evidence from India. *Soc Sci Med.* 2009;68(2):260–5.
- Cela E, Barbiano di Belgiojoso E. Ageing in a foreign country: determinants of self-rated health among older migrants in Italy. *J Ethn Migr Stud.* 2021;47(15):3677–99.
- Noh J-W, Kim J, Yang Y, Park J, Cheon J, Kwon YD. Body mass index and self-rated health in East Asian countries: comparison among South Korea, China, Japan, and Taiwan. *PLoS ONE.* 2017;12(8): e0183881.
- Story WT, Glanville JL. Comparing the association between social capital and self-rated health in poor and affluent nations. *SSM-Popul Health.* 2019;9: 100508.
- Jerkovic OS, Sauliune S, Šumskas L, Birt CA, Kersnik J. Determinants of self-rated health in elderly populations in urban areas in Slovenia, Lithuania and UK: findings of the EURO-URHIS 2 survey. *Eur J Public Health.* 2017;27(suppl_2):74–9.
- Takahashi S, Jang S, Kino S, Kawachi I. Gender inequalities in poor self-rated health: cross-national comparison of South Korea and Japan. *Soc Sci Med.* 2020;252: 112919.
- Duboz P, Boëtsch G, Gueye L, Macia E. Self-rated health in Senegal: a comparison between urban and rural areas. *PLoS ONE.* 2017;12(9): e0184416.
- Vincens N, Emmelin M, Stafström M. Social capital, income inequality and the social gradient in self-rated health in Latin America: a fixed effects analysis. *Soc Sci Med.* 2018;196:115–22.
- Hung N, Lau LL. The relationship between social capital and self-rated health: a multilevel analysis based on a poverty alleviation program in the Philippines. *BMC Public Health.* 2019;19(1):1641. <https://doi.org/10.1186/s12889-019-8013-5>.
- Moreno X, Albala C, Lera L, Sánchez H, Fuentes-García A, Dangour AD. The role of gender in the association between self-rated health and mortality among older adults in Santiago, Chile: a cohort study. *PLoS ONE.* 2017;12(7): e0181317.
- Bardage C, et al. Self-rated health among older adults: a cross-national comparison. *Eur J Ageing.* 2005;2(2):149–58.
- Campos ACV, Albala C, Lera L, Sánchez H, Vargas AMD, e Ferreira EF. Gender differences in predictors of self-rated health among older adults in Brazil and Chile. *BMC Public Health.* 2015;15(1):1–11.
- Menec VH, Shooshtari S, Lambert P. Ethnic differences in self-rated health among older adults: a cross-sectional and longitudinal analysis. *J Aging Health.* 2007;19(1):62–86.
- Verropoulou G. Determinants of change in self-rated health among older adults in Europe: a longitudinal perspective based on SHARE data. *Eur J Ageing.* 2012;9(4):305–18.
- Lima-Costa MF, Firmo JOA, Uchôa E. Differences in self-rated health among older adults according to socioeconomic circumstances: the Bambuí Health and Aging Study. *Cad Saúde Pública.* 2005;21:830–9.
- Gracia E, Herrero J. Internet use and self-rated health among older people: a national survey. *J Med Internet Res.* 2009;11(4): e49.
- Singh L, Arokiasamy P, Singh PK, Rai RK. Determinants of gender differences in self-rated health among older population: evidence from India. *SAGE Open.* 2013;3(2):2158244013487914.
- Acevedo-Garcia D, Bates LM, Osypuk TL, McArdle N. The effect of immigrant generation and duration on self-rated health among US adults 2003–2007. *Soc Sci Med.* 2010;71(6):1161–72.
- Peres MA, et al. Self-rated health among adults in Southern Brazil. *Rev Saude Publica.* 2010;44:901–11.
- Onadja Y, Bignami S, Rossier C, Zunzunegui M-V. The components of self-rated health among adults in Ouagadougou, Burkina Faso. *Popul Health Metr.* 2013;11(1):1–12.
- Shetterly SM, Baxter J, Mason LD, Hamman RF. Self-rated health among Hispanic vs non-Hispanic white adults: the San Luis Valley Health and Aging Study. *Am J Public Health.* 1996;86(12):1798–801.
- Boardman JD. Self-rated health among US adolescents. *J Adolesc Health.* 2006;38(4):401–8.
- Borges CM, Campos ACV, Vargas AD, Ferreira EF, Kawachi I. Social capital and self-rated health among adolescents in Brazil: an exploratory study. *BMC Res Notes.* 2010;3(1):1–6.
- Joffer J, Jerdén L, Öhman A, Flacking R. Exploring self-rated health among adolescents: a think-aloud study. *BMC Public Health.* 2016;16(1):1–10.
- Potrebny T, Torsheim T, Due P, Välimaa R, Suominen S, Eriksson C. Trends in excellent self-rated health among adolescents: a comparative Nordic study. *Nord Välfärdsforskning Nord Welf Res.* 2019;4(2):67–76.
- Wang MP, Ho SY, Lo WS, Lai MK, Lam TH. Smoking is associated with poor self-rated health among adolescents in Hong Kong. *Nicotine Tob Res.* 2012;14(6):682–7.
- Mendoza FS, Fuentes-Afflick E. Latino children's health and the family-community health promotion model. *West J Med.* 1999;170(2):85.

35. Asfaw A, Lamanna F, Klasen S. Gender gap in parents' financing strategy for hospitalization of their children: evidence from India. *Health Econ.* 2010;19(3):265–79.
36. Lundberg SJ. The division of labor by new parents: does child gender matter? *SSRN J.* 2005. <https://doi.org/10.2139/ssrn.826445>.
37. Luthar SS, Latendresse SJ. Children of the affluent. *Curr Dir Psychol Sci.* 2005;14(1):49–53. <https://doi.org/10.1111/j.0963-7214.2005.00333.x>.
38. Meireles AL, Xavier CC, Proietti FA, Caiaffa WT. Influence of individual and socio-environmental factors on self-rated health in adolescents. *Rev Bras Epidemiol.* 2015;18:538–51. <https://doi.org/10.1590/1980-5497201500030002>.
39. Bernard C. Recognizing and addressing child neglect in affluent families. *Child Fam Soc Work.* 2019;24(2):340–7.

Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Ready to submit your research? Choose BMC and benefit from:

- fast, convenient online submission
- thorough peer review by experienced researchers in your field
- rapid publication on acceptance
- support for research data, including large and complex data types
- gold Open Access which fosters wider collaboration and increased citations
- maximum visibility for your research: over 100M website views per year

At BMC, research is always in progress.

Learn more biomedcentral.com/submissions

