

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Association between mobile phone use and self-reported well-being in children: a questionnaire-based cross-sectional study in Chongqing, China
AUTHORS	Zheng, Feizhou; Gao, Peng; He, Mindi; Li, Min; Tan, Jin; Chen, Daiwei; Zhou, Zhou; Yu, Zhengping; Zhang, Lei

VERSION 1 - REVIEW

REVIEWER	Marko Markov Research International USA
REVIEW RETURNED	02-Feb-2015

GENERAL COMMENTS	<p>This paper is very much needed - mainly because it demonstrated the problems with children in China that occur after mobile phone use.</p> <p>It is even more important because the reported problems occurred after only less than two years of use. In other words -at early days of use.</p> <p>The paper will benefit if is indicated the year and eventually province in China</p>
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REVIEWER	Min Kyung Chu Sacred Heart Hopsital, Hallm University College of Medicine
REVIEW RETURNED	09-Feb-2015

GENERAL COMMENTS	<p>This is an interesting manuscript regarding MP use and well-being in Chinese children. However, some points of this manuscript are needed to be revised.</p> <ol style="list-style-type: none">1. Most of all, authors should revise properly ethical descriptions such as IRB approval.2. Although this is the first reports reporting well-being among MP using children in China, there are already many studies reporting well-being among MP users (REFERENCE NO. 13, 14, 15, 16). What is the originality of this manuscript? Authors should revise originality of this study more clearly.3. Authors described that fatigue was more prevalent among MP using children compared to non-MP using children, which was not reported in the previous studies. Authors should include the reason for this findings at DISCUSSION.4. Authors should include how to investigate fatigue in detail at MEHODS. In addition, fatigue is closely associated with sleep duration or sleep quality. Description regarding fatigue, sleep duration and sleep quality should be included at RESULTS or
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	<p>DISCUSSION.</p> <p>5. Revise properly decimal points. Most of decimal points in this manuscript is 2 decimal points. However, it would be better to revise them as 2 decimal points.</p> <p>6. Authors used HBCS questionnaire for this study. Foe using foreign questionnaire, it should be included whether it was validated in Chinese language or not.</p> <p>7. Revise Keywords properly using MESH words.</p> <p>8. English copy editing is needed.</p> <p>9. Include STROBE reporting.</p>
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REVIEWER	Enrique A. Navarro & Claudio Gomez-Perretta Universitat de Valencia, SPAIN Hospital la Fe, SPAIN
REVIEW RETURNED	18-Feb-2015

GENERAL COMMENTS	<p>The work is very interesting and will help to better understand the side effects of mobile phone use in young population.</p> <p>We missed a previous univariate analysis, in order to adjust only those variables that are significant. It would also be useful to know if there is multicollinearity between the variables in the multivariate regression.</p> <p>ROC analysis, and Nagelkerke would help to assess the goodness of fit.</p> <p>Minor issues: It would be useful to give more details about the binary logistic regression. Also, Wald value and significance for the overall of categorical variables.</p> <p>Finally, the manuscript could be largely improved in analyzing also the radiofrequency dosage per subject, this could be carried out by taking the information of SAR (Specific Absorption Rate) from the mobile phones, or doing some measurements.</p>
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VERSION 1 – AUTHOR RESPONSE

Reviewer #1:

This paper is very much needed - mainly because it demonstrated the problems with children in China that occur after mobile phone use. It is even more important because the reported problems occurred after only less than two years of use. In other words -at early days of use. The paper will benefit if is indicated the year and eventually province in China.

Response: Thank you for your very valuable and helpful comments.

Reviewer #2:

This is an interesting manuscript regarding MP use and well-being in Chinese children. However, some points of this manuscript are needed to be revised.

Response: Thank you for your concern.

1. Most of all, authors should revise properly ethical descriptions such as IRB approval.

Response: Third Military Medical University Ethical Committee serves as the institutional review board (IRB). The protocol of this study was approved by the Third Military Medical University Ethical Committee. (Page 14, Line 21-22).

2. Although this is the first reports reporting well-being among MP using children in China, there are already many studies reporting well-being among MP users (REFERENCE NO. 13, 14, 15, 16). What

is the originality of this manuscript? Authors should revise originality of this study more clearly.
Response: Thank you for your comment. This study is one of the first studies to investigate the potential association between MP use and well-being in children in China. The MP usage rate in children has reached 72.92% in our study, and it was higher than the prevalence of MP usage reported in previous similar research in Korea (64.50%)¹, China (63.20%)² and Iran (31.42%)³. (Page 9, Line 22; Page 10, Line 3-5)

3. Authors described that fatigue was more prevalent among MP using children compared to non-MP using children, which was not reported in the previous studies. Authors should include the reason for this findings at DISCUSSION.

Response: Thank you for your suggestion. Our result showed that fatigue was significantly associated with both the years of MP usage and the daily duration of MP calls. And after adjusting for confounders, the association still remained statistically significant. A possible reason was that the fatigue related to MP use was more likely to be a mental disorder than a physiological one, due to long-time MP exposure served as a chronic stressor. As children who used MP were under chronic stressor for a long time, they were more likely to feel fatigue than non-MP using children. (Page 11, Line 11-13).

4. Authors should include how to investigate fatigue in detail at MEHODS. In addition, fatigue is closely associated with sleep duration or sleep quality. Description regarding fatigue, sleep duration and sleep quality should be included at RESULTS or DISCUSSION.

Response: Thank you for your suggestion. We investigated fatigue at last 6 months by a five-point Likert scale. Children chose the frequency of fatigue from the five options: nearly daily, several times a week, nearly every week, about once a month, seldom or never. Fatigue was considered to be present if it was reported at least “nearly every week”.

We have added “Sleep disturbance was reported as a significant contributor to fatigue⁴. And the sleep quality worsened with increasing MP use time^{5,6}. Maybe that's another reason for the association between fatigue and MP usage” in DISCUSSION section to explain the association between fatigue and MP usage. (Page 11, Line 14-16).

5. Revise properly decimal points. Most of decimal points in this manuscript is 2 decimal points. However, it would be better to revise them as 2 decimal points.

Response: Thank you for your concern. We have revised the decimal points in this manuscript as 2 decimal points. (Page 4, Line 5; Page 10, Line 15; Page 12, Line 16-17).

6. Authors used HBSC questionnaire for this study. Foe using foreign questionnaire, it should be included whether it was validated in Chinese language or not.

Response: Thank you for your comment. The HBSC study is an international tool to examine health of children^{7,8,9,10}. We selected the well-being section and translated it by our English professional colleague. We have added the Cronbach's α coefficient of the well-being items in the METHODS section to validate the questionnaire. (Page 7, Line 10). On the other hand, the reliability of selected items in the Chinese version of the HBSC survey questionnaire had been assessed and most selected indicators had satisfactory test-retest reliability for Chinese students¹¹.

7. Revise Keywords properly using MESH words.

Response: Thank you for your suggestion. We have added the Keywords in the ABSTRACTS section. (Page 3, Line 7)

8. English copy editing is needed.

Response: Thank you for your concern. We have made some language corrections according to our English professional colleague and the manuscript was edited by American Journal Experts (AJE). (http://learn.aje.com/cn/?RINS=NAT&utm_source=Baidu&utm_medium=PPC&utm_campaign=AJE_B)

rand_CN_Broad).

9. Include STROBE reporting.

Response: Thank you for your suggestion. The present study was following the STROBE guidelines. (Page 2, Line 11-13; Page 6, Line 6-8) We have added the STROBE reporting as supplementary 3.

References

1. Byun YH, Ha M, Kwon HJ, et al. Epidemiological Characteristics of Mobile Phone Ownership and Use in Korean Children and Adolescents. *Environ Health Toxicol* 2013;28:e2013018.
2. Chiu CT, Chang YH, Chen CC, et al. Mobile phone use and health symptoms in children. *J Formos Med Assoc* 2014 Aug 9.
3. Mortazavi SM, Atefi M, Kholghi F. The pattern of mobile phone use and prevalence of self-reported symptoms in elementary and junior high school students in shiraz, iran. *Iran J Med Sci* 2011;36(2):96-103.
4. Strober LB. Fatigue in multiple sclerosis: a look at the role of poor sleep. *Front Neurol* 2015;6:21.
5. Munezawa T, Kaneita Y, Osaki Y, et al. The Association between Use of Mobile Phones after Lights Out and Sleep Disturbances among Japanese Adolescents: A Nationwide Cross-Sectional Survey. *Sleep* 2011;34(8):1013-20.
6. Sahin S, Ozdemir K, Unsal A, et al. Evaluation of mobile phone addiction level and sleep quality in university students. *Pak J Med Sci* 2013;29(4):913-8.
7. Heinrich S, Thomas S, Heumann C, et al. The impact of exposure to radio frequency electromagnetic fields on chronic well-being in young people - A cross-sectional study based on personal dosimetry. *Environ Int* 2011;37(1):26-30.
8. Redmayne M, Smith E, Abramson MJ. The relationship between adolescents' well-being and their wireless phone use: a cross-sectional study. *Environ Health* 2013;12:90.
9. Thomas S, Kühnlein A, Heinrich S, et al. Exposure to mobile telecommunication networks assessed using personal dosimetry and well-being in children and adolescents: the German MobilEe-study. *Environ Health* 2008;7:54.
10. Kühnlein A, Heumann C, Thomas S, et al. Personal exposure to mobile communication networks and well-being in children - a statistical analysis based on a functional approach. *Bioelectromagnetics*. 2009;30(4):261-9.
11. Liu Y, Wang M, Tynjälä J, et al. Test-retest reliability of selected items of Health Behaviour in School-aged Children (HBSC) survey questionnaire in Beijing, China. *BMC Med Res Methodol* 2010;10:73.

Reviewer #3:

The work is very interesting and will help to better understand the side effects of mobile phone use in young population. We missed a previous univariate analysis, in order to adjust only those variables that are significant. It would also be useful to know if there is multicollinearity between the variables in the multivariate regression. Response: Thank you for your concern. We used the logistic regression model which is a common model used in cross-sectional studies for data analysis in our research. Considering our sample size, we had no regard for multicollinearity between the variables in the multivariate regression. We will consider the multicollinearity between the variables in our further research with larger sample.

ROC analysis, and Nagelkerke would help to assess the goodness of fit. Response: Thank you for your suggestion. Assessment of the fit between the model and the data was gauged by the Nagelkerke R² in goodness-of-fit test. We have added it in the statistical analysis section. (Page 7, line 22; Page 8, line 1)

Minor issues: It would be useful to give more details about the binary logistic regression. Also, Wald value and significance for the overall of categorical variables. Response: Thank you for your

comment. We have added the Wald value and significance for the overall of categorical variables as supplementary 4, 5. (Page 9, line 13; Page 9, line 15).

Finally, the manuscript could be largely improved in analyzing also the radiofrequency dosage per subject, this could be carried out by taking the information of SAR (Specific Absorption Rate) from the mobile phones, or doing some measurements.

Response: Thank you for your suggestion. This study was a questionnaire-based cross-sectional study and the dosage was delaminated by children's self-reported MP use time. Lack of dosimetric measurements or calculation of SAR was a limitation of this research. We will explore the association between MP use and well-being in children by dosimetry in the further study.

VERSION 2 – REVIEW

REVIEWER	Min Kyung Chu Sacred Heart Hospital, Hallym University, Korea
REVIEW RETURNED	29-Mar-2015

GENERAL COMMENTS	<p>Authors tried to revise most of points which mentioned in the previous review. However, there are still several important points to revise.</p> <ol style="list-style-type: none"> 1. For validity of Chinese version HBSC questionnaire, authors only mentioned reliability rather than validity. If validity data for Chinese version HBSC questionnaire is not available, please include description regarding this issue at DISCUSSION as limitation of this study. 2. For sleep issue regarding the association between MP use and well-being, I asked sleep duration and sleep disturbance. However, authors only replied sleep disturbance. There are already sleep duration issue regarding MP use. <ol style="list-style-type: none"> 1) Sleep duration, schedule and quality among urban Chinese children and adolescents: associations with routine after-school activities. PLoS One. 2015 Jan 22;10(1):e0115326. 2) Exploring the complex pathways among specific types of technology, self-reported sleep duration and body mass index in UK adolescents. Int J Obes (Lond). 2013 Sep;37(9):1254-60. 3) The association between use of mobile phones after lights out and sleep disturbances among Japanese adolescents: a nationwide cross-sectional survey. Sleep. 2011 Aug 1;34(8):1013-20. 4) The association between problematic cellular phone use and risky behaviors and low self-esteem among Taiwanese adolescents. BMC Public Health. 2010 Apr 28;10:217. <p>Please revise descriptions about sleep duration and sleep disturbance on the association between MP use and fatigue at DISCUSSION.</p> 3. For decimal points, authors revised as decimal points. However, most of 2 decimal points seem to be inappropriate. Revise them as 1 decimal points except p-values. 4. STROBE report is a standard report form for epidemiological and observational studies. So, it is not essential to be included in ABSTRACT and MEHODS. It seemed to be somewhat unnatural. Consider to remove STROBE statement from main body. 5. Use square [] rather than round () PAGE 8 line 9. 6. In TABLES, include abbreviations at each tables (ex. MP: mobile phone). 7. Include IRB/EC permission document as supplement material. 8. Authors described that this study was the first report regarding the association between MP use and well-being among adolescent in
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	China. However there are already 1 report regarding the association between MP use and health problem among Chinese adolescent in Taiwan. So, revise as mainland china rather than china itself. For significance of this study, Please revise more clearly the significance of this study as mentioned at INTRODUCTION and DISCUSSION. 9. Locate reference numbers at the end of a sentence.
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REVIEWER	Enrique A. Navarro Universitat de Valencia, SPAIN
REVIEW RETURNED	10-Apr-2015

GENERAL COMMENTS	This is a revised manuscript and it was modified according to reviewers' comments. We recommend its publication.
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VERSION 2 – AUTHOR RESPONSE

Reviewer #1:

Authors tried to revise most of points which mentioned in the previous review. However, there are still several important points to revise.

1. For validity of Chinese version HBSC questionnaire, authors only mentioned reliability rather than validity. If validity data for Chinese version HBSC questionnaire is not available, please include description regarding this issue at DISCUSSION as limitation of this study.

Response: Thank you for your comment. We have included the description “The unavailable validity data for Chinese version HBSC questionnaire was another limitation of this study” at DISCUSSION as limitation of this study. (Page 13, Line 1-2)

2. For sleep issue regarding the association between MP use and well-being, I asked sleep duration and sleep disturbance. However, authors only replied sleep disturbance. There are already sleep duration issue regarding MP use.

1) Sleep duration, schedule and quality among urban Chinese children and adolescents: associations with routine after-school activities. PLoS One. 2015 Jan 22;10(1):e0115326.

2) Exploring the complex pathways among specific types of technology, self-reported sleep duration and body mass index in UK adolescents. Int J Obes (Lond). 2013 Sep;37(9):1254-60.

3) The association between use of mobile phones after lights out and sleep disturbances among Japanese adolescents: a nationwide cross-sectional survey. Sleep. 2011 Aug 1;34(8):1013-20.

4) The association between problematic cellular phone use and risky behaviors and low self-esteem among Taiwanese adolescents. BMC Public Health. 2010 Apr 28;10:217.

Please revise descriptions about sleep duration and sleep disturbance on the association between MP use and fatigue at DISCUSSION.

Response: Thank you for your suggestion. We have revised descriptions about sleep duration and sleep disturbance on the association between MP use and fatigue from “And the sleep quality worsened with increasing MP use time” to “And the sleep quality worsened or sleep duration shorten1,2,3,4 with increasing MP use time” at DISCUSSION. (Page 11, Line 12)

3. For decimal points, authors revised as decimal points. However, most of 2 decimal points seem to be inappropriate. Revise them as 1 decimal points except p-values.

Response: Thank you for your concern. We have revised the percentages as 1 decimal point, but maintained OR and 95%CI as 2 decimal points because most of OR and 95%CI in general were represented as 2 decimal points. (Page 2, Line 15; Page 4, Line 5; Page 6, Line 6-7; Page 8, Line 11-18, 22; Page 9, Line 1, 22; Page 10, Line 2, 11-12; Page 12, Line 13-15; Table1-3)

4. STROBE report is a standard report form for epidemiological and observational studies. So, it is not essential to be included in ABSTRACT and MEHODS. It seemed to be somewhat unnatural. Consider to remove STROBE statement from main body.

Response: Thank you for your suggestion. We have removed STROBE statement from ABSTRACT and MEHODS. (Page 2, Line 11; Page 6, Line 6)

5. Use square [] rather than round () PAGE 8 line 9.

Response: Thank you for your comment. We have revised round () to square []. (Page 8, Line 7)

6. In TABLES, include abbreviations at each tables (ex. MP: mobile phone).

Response: Thank you for your concern. We have added the abbreviations at each table. (Page 21, Line 3; Page 22, Line 3; Page 24, Line 2)

7. Include IRB/EC permission document as supplement material.

Response: Thank you for your suggestion. We have added EC permission document as supplement 5. (Page 14, Line 22)

8. Authors described that this study was the first report regarding the association between MP use and well-being among adolescent in China. However there are already 1 report regarding the association between MP use and health problem among Chinese adolescent in Taiwan. So, revise as mainland china rather than china itself. For significance of this study, Please revise more clearly the significance of this study as mentioned at INTRODUCTION and DISCUSSION.

Response: Thank you for your comment. We have revised "China" to "mainland China" in INTRODUCTION and DISCUSSION. (Page 5, Line 17; Page 9, Line 20)

9. Locate reference numbers at the end of a sentence.

Response: Thank you for your suggestion. We have located reference numbers at the end of a sentence. (Page 7, Line 7; Page 11, Line 18)

References

1. Munezawa T, Kaneita Y, Osaki Y, et al. The Association between Use of Mobile Phones after Lights Out and Sleep Disturbances among Japanese Adolescents: A Nationwide Cross-Sectional Survey. *Sleep* 2011;34(8):1013-20.
2. Jiang X, Hardy LL, Baur LA, et al. Sleep duration, schedule and quality among urban Chinese children and adolescents: associations with routine after-school activities. *PLoS One* 2015;10(1):e0115326.
3. Arora T, Hussain S, Hubert Lam KB, et al. Exploring the complex pathways among specific types of technology, self-reported sleep duration and body mass index in UK adolescents. *Int J Obes (Lond)* 2013;37(9):1254-60.
4. Yang YS, Yen JY, Ko CH, et al. The association between problematic cellular phone use and risky behaviors and low self-esteem among Taiwanese adolescents. *BMC Public Health* 2010;10:217.

Reviewer #2:

This is a revised manuscript and it was modified according to reviewers' comments. We recommend its publication.

Response: Thank you for your very valuable and helpful comments.