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Title: Barriers and facilitators to physical activity among ethnic Chinese children: a systematic review protocol

Authors:

Haiquan Wang ^{1,2}

Holly Blake ^{2,3}

Kaushik Chattopadhyay^{1,2}

1. Division of Epidemiology and Public Health, School of Medicine, University of Nottingham, Nottingham, United Kingdom

2. The Nottingham Centre for Evidence-Based Healthcare: A Joanna Briggs Institute Centre of Excellence, Nottingham, United Kingdom

3. School of Health Sciences, Faculty of Medicine and Health Sciences, University of Nottingham, Nottingham, United Kingdom

Corresponding author: Haiquan Wang, email: Haiquan.Wang@nottingham.ac.uk

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1 **Title**

2 Barriers and facilitators to physical activity among ethnic Chinese children: a systematic review
3 protocol

4

5 **Review objective**

6 The purpose of this systematic review is to summarize the barriers and facilitators to physical
7 activity among ethnic Chinese children.

8

9 **Introduction**

10 *Physical activity in childhood*

11 Health benefits of physical activity can be found in all age groups.^{1,2} In children, physical
12 activity promotes overall health, fitness and well-being.³ It enhances their body composition
13 and skeletal health and contributes to the prevention and delay of chronic diseases (e.g.
14 obesity, type 2 diabetes, hypertension and cardiovascular diseases).⁴⁻⁶ It improves their
15 psychological health, including self-esteem, and promotes social contacts and friendships.³ In
16 terms of learning, it improves their concentration power, and ability to set priorities and goals.⁷
17 It can improve their intellectual development and academic and physical performance.⁸⁻¹⁰ In
18 terms of economic benefits, it contributes to lower healthcare utilization and costs associated
19 with physical inactivity-related diseases.^{5,10,11} In children with disabilities, it contributes to their
20 overall development, quality of life, sense of self, social well-being and future health.^{7,8}

21 Overall, physical inactivity increases the risk of many adverse health conditions, especially
22 chronic diseases. For example, it contributes around 6% to the burden of coronary heart
23 disease, 7% to type 2 diabetes, 10% to breast cancer and colon cancer.⁵ Physical activity can
24 add around one year of life expectancy.⁵ According to the World Health Organization (WHO),
25 physical inactivity is the fourth leading risk factor of global mortality and is responsible for
26 around 6% of all deaths worldwide. Annually, it causes around 0.7, 1.6 and 1 million deaths in
27 high, middle and low income countries, respectively.¹²

28 An individual's childhood has been recognized as the most crucial period to promote the
29 uptake and adherence to physical activity.¹³⁻¹⁵ This period is recognized as the most physically
30 active period in a person's life.¹⁵ This period is an important transition point where the physical

31 activity level starts to decline.¹⁶ The 2013/2014 Health Behavior in School-Aged Children
32 (HBSC) survey, conducted in 33 countries, reported a 9% and 10% decrease in
33 moderate-to-vigorous physical activity (MVPA) among boys and girls from 11 to 15 years of
34 age, respectively.¹⁷ According to the WHO's physical activity guideline, children should
35 engage in at least 60 minutes of MVPA/day and reduce their sedentary time.¹⁸ However,
36 globally, the physical activity level remains low among children. The data from 34 countries
37 shows that only 24% and 15% of school-aged boys and girls are physically active,
38 respectively.¹⁹

39

40 *Physical activity among ethnic Chinese children*

41 In China, the situation is even worse, and evidence suggests that the physical activity level
42 among children has not improved over the past two decades.^{20,21} In 2014, only 9% of children
43 were physically active, much lesser compared to many high-income countries. Around 25% of
44 physically active children did not achieve the required intensity (MVPA).²² Usually, Chinese
45 schools are evaluated in terms of their academic performances. Therefore, schools prefer to
46 allocate their resources (including time) more on academic curriculums compared to physical
47 activity.²³ In schools, health (physical) education and structured exercise programs do exist for
48 these children. Health education sessions are delivered orally and/or in written format.
49 Structured exercise sessions are run to achieve the recommended intensity and duration of
50 physical activity. However, the development process of these programs remains questionable
51 and most of these programs are not based on behavior change theories.²⁴⁻²⁶

52 Similarly, in many high-income countries, ethnic Chinese children are less physically active
53 compared to children of other ethnic origins.^{4,27,28} For example, a study reported that around
54 45% of Chinese American children were not actively playing outdoor games and sports.²⁸ In
55 these countries, ethnic Asian sub-groups are often aggregated as a homogenous group and
56 the same generic physical activity promotion intervention is provided to all.^{4,27} The intervention
57 that works in children of other ethnicities may not have the same positive impact on ethnic
58 Chinese children.

59 There are socio-cultural issues which hinder physical activity among ethnic Chinese children.

60 Generally, parents of ethnic Chinese children are more concerned about their child's safety

61 and academic achievements, which in turn promotes sedentary behavior and impedes
62 physical activity.²⁹ After school hours and on weekends, these children spend more time on
63 academic studies than on physical activity.²³ In addition, ethnic Chinese girls are less likely to
64 engage in physical activity. In many conservative Chinese societies, there is a huge
65 socio-cultural pressure on girls to avoid physical activity. The image of Chinese women does
66 not fit well with being physically active.⁴ Thus, there is a need for a socio-culturally appropriate
67 intervention for ethnic Chinese children, addressing their specific barriers to physical activity.

68

69 *The rationale for the systematic review*

70 Several qualitative studies and cross-sectional surveys have been conducted to determine the
71 barriers and facilitators to physical activity among ethnic Chinese children.^{4,28-36} Until now, no
72 systematic review on this topic has been published in English. A few systematic reviews on the
73 same topic are available in Chinese, but they are extremely brief and limited in scope, and
74 their quality remains questionable. They searched only a few Chinese databases with a limited
75 search strategy and included only cross-sectional surveys.³⁷⁻⁴⁰ Overall, the findings from these
76 studies can be grouped into four broad themes: (1) personal (e.g. unhealthy physical activity
77 related behavior of children), (2) socio-cultural (e.g. parental pressure to perform well in
78 academics and less on doing physical activity), (3) environmental (e.g. poor availability of and
79 access to physical activity facilities, unsafe neighborhood for doing physical activity), and (4)
80 policy- and program-related (e.g. inappropriate content and structure of physical activity
81 programs, and those delivering these programs).

82 A child's residence can have an impact on their views, experiences, attitudes, understandings,
83 perceptions and perspectives regarding barriers and facilitators to physical activity.⁴¹ Thus, in
84 order to uncover any associated differences or similarities in their views, experiences, attitudes,
85 understandings, perceptions and perspectives, our systematic review will separately analyse
86 data from studies conducted in Chinese and non-Chinese territories. The aim of our systematic
87 review is to summarize the personal, social, environmental and policy- and program-related
88 barriers and facilitators to physical activity among ethnic Chinese children. In other words, the
89 findings will be grouped into four broad themes, namely, (1) personal (relating to physical or
90 psychological factors of children), (2) socio-cultural (relating to people the child would come in

91 contact with), (3) environmental (structural elements such as facilities and transport), and (4)
92 policy- and program-related (relating to programs, organizations and staff).³ We will follow the
93 Joanna Briggs Institute (JBI) systematic review process to ensure its quality.⁴² Both English
94 and Chinese databases will be searched with a comprehensive search strategy. The review
95 will include both qualitative studies and cross-sectional surveys and will be written in English
96 for a wider dissemination among international readers.

97

98 **Keywords**

99 Physical activity, Chinese, Children

100

101 The systematic review process will adhere to the preferred reporting items for systematic
102 reviews and meta-analyses (PRISMA) and JBI systematic reviews guidelines.^{42,43}

103

104 *Inclusion and exclusion criteria*

105 Types of participants

106 This review will include studies conducted among ethnic Chinese children (between 6 and 17
107 years of age) residing in either Chinese or non-Chinese territories or among people who have
108 responsibility for them (such as their parents, guardians, teachers). The study will be excluded
109 if the group mean age of ethnic Chinese children is <6 years or ≥18 years, or if it includes
110 children of other ethnicities and not ethnic Chinese children. If it includes both ethnic Chinese
111 children and children of other ethnicities, only the barriers and facilitators to physical activity
112 among ethnic Chinese children will be extracted. The study will be excluded if it is not possible
113 to extract these findings (i.e. not possible to distinguish between ethnic Chinese children and
114 children of other ethnicities).

115

116 Phenomena of interest

117 This review will include studies that focus on the views, experiences, attitudes, understandings,
118 perceptions and perspectives regarding the barriers and facilitators to physical activity.

119

120 Context

121 Any study setting will be included such as home, community and school, either in Chinese or
122 non-Chinese territories.

123

124 Types of studies

125 The review will include studies that focus on qualitative data, including, but not limited to,
126 designs such as phenomenology, ethnography, grounded theory and action research.

127 Qualitative studies provide an in-depth understanding of the barriers and facilitators to physical
128 activity among children, including identification and exploration of areas unknown to
129 researchers.⁴⁴ We will also include cross-sectional surveys where free-text relating to the
130 review question is reported within the paper.

131

132 **Methods**

133 *Search strategy*

134 An initial limited search was carried out in MEDLINE and China National Knowledge
135 Infrastructure (CNKI) databases using the initial keywords, and these keywords were physical
136 activity, barriers, facilitators, Chinese and children. The titles and abstracts of the studies were
137 screened for keywords, and the index terms used to describe the article were also identified.

138 The search results were inspected to ensure that the relevant articles were identified.

139 We aim to search a wide range of sources, to find both published and unpublished studies.

140 The following databases will be searched for published studies: MEDLINE (1946-present),

141 EMBASE (1947-present), CINAHL (1937-present), PsycINFO (1806-present), BNI

142 (1993-present), AMED (1985-present), Web of Science (1900-present), Scopus

143 (1788-present), CNKI (1979-present), Wanfang (1995-present) and VIP (1989-present). The

144 search strategy, to be used in MEDLINE, is detailed in Appendix 1. This search strategy will be

145 adopted for other databases (including Chinese databases), in consultation with an

146 information specialist/librarian. The search for unpublished studies will include EthOS,

147 OpenGrey, ProQuest Dissertations and Theses, CNKI and Wanfang. The reference list of all

148 the identified reviews and studies selected for inclusion in the review will be screened for

149 additional studies. No language restrictions will be applied, and translations will be sought

150 where necessary.

151

152 *Screening and full-text reading*

153 Following the search, all identified citations will be collated and uploaded into EndNote X8.2,⁴⁵

154 a reference management software. Subsequently, all the duplicate citations will be removed.

155 Titles and abstracts will be screened for eligibility using the inclusion criteria by two reviewers

156 independently (HW and KC/HB). Studies identified as potentially eligible or those without an

157 abstract will have their full-text retrieved and their details will be imported into the JBI premier

158 software for systematic review of the literature, system for the unified management,

159 assessment and review of information (JBI SUMARI).⁴⁶ Full-text of the studies will be

160 assessed against the inclusion criteria by two reviewers independently (HW and KC/HB).

161 Full-text studies that do not meet the inclusion criteria will be excluded, and the reasons for

162 exclusion will be reported. Any disagreements that arise between the two reviewers will be

163 resolved through discussion. If consensus is not reached, then a third reviewer (KC/HB) will be

164 involved.

165

166 *Assessment of methodological quality*

167 All studies, selected for inclusion, will be critically assessed, by two reviewers (HW and KC/HB)

168 using the standardized critical appraisal tools incorporated within JBI SUMARI (one for

169 qualitative studies and one for cross-sectional studies).^{42,47} These tools use a series of criteria

170 that can be scored as being met (yes), not met (no) or unclear or where appropriate, not

171 applicable (n/a) to that particular study. The two reviewers will independently go through each

172 criterion as well as comment on it. Any disagreements that arise between the reviewers will be

173 resolved through discussion. If consensus is not reached, then a third reviewer (KC/HB) will be

174 involved. The results of critical appraisal for all questions will be presented in a table and

175 narrated.

176 All studies, regardless of the results of their methodological quality, will undergo data

177 extraction and synthesis, where possible. As recommended by JBI, a cut-off score will not be

178 used to include/exclude studies as many studies are likely to be of poor quality.⁴² Apart from

179 high-quality studies, poor quality studies can also generate potentially valuable insights.

180 Together, they can lead to a richer understanding of the research phenomenon.⁴⁸

181

182 *Data extraction*

183 Data will be extracted from papers included in the review using the standardized data
184 extraction tool incorporated within JBI SUMARI,^{42,46} independently by two reviewers (HW and
185 KC/HB). Any disagreements that arise between the two reviewers will be resolved through
186 discussion. If consensus is not reached, then a third reviewer (KC/HB) will be involved. For
187 clarification or additional data, where necessary, the corresponding author of the included
188 paper will be contacted by email (two times per author). In the first phase of data extraction,
189 study characteristics will be extracted - study period, design, location (territory
190 (Chinese/non-Chinese) and country), phenomena of interest, context (such as home,
191 community and school), participant characteristics (such as age and gender), inclusion and
192 exclusion criteria, sample size, recruitment method, data collection procedure and tool, data
193 analysis technique and authors' conclusion. In the second phase of data extraction, specific
194 study findings will be extracted - barriers and facilitators to physical activity among ethnic
195 Chinese children. In addition, where possible, illustrations from the text that support these
196 findings will be extracted (one illustration per finding). The findings and illustrations will be the
197 actual verbatim words of the authors. The credibility of each finding will be assessed using the
198 following criteria:⁴²

- 199 ● Unequivocal: the finding is accompanied by an illustration that is beyond a reasonable
200 doubt and is not open to challenge.
- 201 ● Credible: the finding is accompanied by an illustration that is lacking a clear association
202 with it and is open to challenge.
- 203 ● Not supported: when neither unequivocal nor credible can be applied and when the most
204 notable findings are not supported by the data.

205

206 *Data synthesis*

207 In order to uncover any associated differences or similarities in the views, experiences,
208 attitudes, understandings, perceptions and perspectives regarding barriers and facilitators to
209 physical activity, the data from Chinese and non-Chinese territories will be analysed separately.

210 Study findings from all study designs will, where possible, be pooled using JBI SUMARI with
211 the meta-aggregation approach.^{46,49} This will involve the aggregation or synthesis of findings
212 to generate a set of statements that represent that aggregation, through assembling the
213 findings and categorizing these findings on the basis of similarity in meaning. These categories
214 will then be subjected to a synthesis in order to produce a single comprehensive set of
215 synthesized findings. Where textual pooling is not possible, the findings will be presented in
216 narrative form.

217

218 *Assessing certainty in the findings*

219 The final synthesized findings will be graded according to the ConQual approach for
220 establishing confidence in the output of research synthesis and presented in a summary of
221 findings table.⁵⁰ The table will include the major elements of the review and details how the
222 ConQual score is developed. The table will include the title, population, phenomena of interest
223 and context for the specific review. Each synthesized finding from the review will then be
224 presented along with the type of research informing it, a score for dependability, credibility and
225 the overall ConQual score.

226

227 **Conflict of interest**

228 The authors declare no conflict of interest.

229

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368 **Appendix 1**

369 **Search strategy**

370 **1.** exp physical fitness/

371 **2.** exp physical education and training/

372 **3.** exp exercise/

373 **4.** exp sports/

374 **5.** exp sedentary lifestyle/

375 **6.** (physical adj (fitness OR education OR training OR activit* OR inactivit*)).mp.

376 **7.** (exercise* OR sport* OR sedentariness).mp.

377 **8.** (sedentary adj (lifestyle OR behavio\$r)).mp.

378 **9.** 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8

379 **10.** (barrier* OR imped* OR challenge* OR hinder* OR hindrance* OR obstacle*

380 OR obstruct* OR deter* OR facilitat*).mp.

381 **11.** exp qualitative research/

382 **12.** exp interview/

383 **13.** exp focus groups/

384 **14.** exp cross-sectional studies/

385 **15.** exp surveys and questionnaires/

386 **16.** (qualitative OR interview* OR focus group* OR cross-sectional OR cross sectional OR

387 survey*).mp.

388 **17.** 11 OR 12 OR 13 OR 14 OR 15 OR 16

389 **18.** 10 OR 17

390 **19.** exp child/

391 **20.** exp adolescent/

392 **21.** exp students/

393 **22.** exp minors/

394 **23.** (child* OR adolescen* OR student* OR minor* OR kid* OR teen* OR youth* OR young OR

395 juvenile*).mp.

396 **24.** 19 OR 20 OR 21 OR 22 OR 23

397 **25.** exp Asian Continental Ancestry Group/

398 **26.** exp China/

399 **27.** (Chinese OR China).mp

400 **28.** 25 OR 26 OR 27

401 **29.** 9 AND 18 AND 24 AND 28

402