

1 **Awareness, facilitators and barriers to policy implementation related to obesity**
2 **prevention for primary school children in Malaysia**

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80 **ABSTRACT**

81 **Purpose.** To assess the awareness, facilitators and barriers to policy implementation
82 related to obesity prevention for primary school children.

83 **Design.** A cross-sectional study administered using an online questionnaire.

84 **Setting.** Conducted in 447 primary schools in a state in Malaysia.

85 **Subjects.** One school administrator from each school served as a subject.

86 **Measures.** The questionnaires consisted of 32 items on awareness, policy
87 implementation; facilitators and barriers to policy implementation.

88 **Analysis.** Descriptive analysis was used to describe the awareness, facilitators and
89 barriers of policies implementation. Association between schools' characteristics and
90 policy implementation was assessed using logistic regression.

91 **Results.** The majority (90%) of school administrators were aware of the policies.
92 However, only 50% to 70% of schools had implemented the policies fully. Reported
93 barriers were lack of equipment, insufficient training and limited time to complete
94 implementation. Facilitators of policy implementation were commitment from the
95 schools, staff members, students and canteen operators. Policy implementation was
96 comparable in all school types and locality; except the policy on "Food and Drinks sold
97 at the school canteens" was implemented by more rural compared to urban schools
98 (Odds ratio 1.74, 95% Confidence Interval: 1.13, 2.69).

99 **Conclusion.** Majority of the school administrators were aware of the existing policies,
100 however, the implementation was only satisfactory. The identified barriers to policy
101 implementation were modifiable and thus the stakeholders should consider re-
102 strategizing plans in overcoming them.

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104 **Keywords.** *school policies, school guidelines, facilitators, barriers, obesity, school*

105 *children*

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120 **INTRODUCTION**

121 Overweight and obesity is a major public health problem in our country, Malaysia.
122 In 2010, the prevalence of adult obesity in our country was ranked the first in South-
123 East Asia and sixth in Asia¹⁻³. There was a sevenfold increase in obesity from 1996
124 (4.4%)⁴ to 2015 (33.4%).^{4,5} The prevalence of childhood obesity (BMI for age >+2SD)
125 in 2015 was 11.9% (CI: 10.9-12.9).⁵ This trend is worrisome since Malaysia has a
126 young age populations of 26%⁶ and obesity is found to persist from childhood into
127 adulthood.

128

129 In many countries, the rising prevalence of childhood obesity was recognized by
130 their governments resulting in various initiatives and interventions implemented to
131 promote healthy behavior among school children. Many national policies were
132 specifically developed for school children, which had positive effects on their diet (e.g.
133 the free flow of fresh fruits and vegetables in the school)⁷ and physical activities.^{8,9}

134

135 In view of the rising prevalence of obesity in our country, managing obesity among
136 school children has been given a priority by the Ministry of Health.¹⁰ Many programs
137 were introduced to implement various policies for school children such as the
138 “Integrated School Health Program”, “Self-evaluation Program” and “School Health
139 Promotion-Young Doctors Program.”¹¹⁻¹⁶ The Integrated School Health Program is
140 implemented by the Ministry of Education in collaboration with the Ministry of Health
141 to provide health services (such as the school health service, school dental service, and
142 school environmental health service) to the school children. Self-evaluation program is

143 part of the initiatives under the implementation of Management of Healthy School
144 Canteens guidelines to ensure that school canteen operators (who sell food and beverage
145 at school canteens) provide safe and healthy meals for school children. The School
146 Health Promotion-Young Doctors Program is part of health promotion initiatives in the
147 school. Peer mentors were selected among the school children of Year 4, 5 and 6 as
148 change agents in the schools to improve the students' knowledge and skills. These
149 "young doctors" will try to promote positive health behaviour among their own peers,
150 school communities and family members.

151

152 The effectiveness of school-based policies (either written directives, documented
153 programs, written guidelines) against childhood obesity depends on their
154 implementation. Often, implementation is not optimal even when the policies are
155 publicly mandated.¹⁷ Therefore, evaluation of policy implementation is essential. To
156 date, only few studies have examined facilitators and barriers influencing the
157 implementation of school-based obesity prevention policies.¹⁷ Therefore, the purpose of
158 this study was to assess the awareness of the available related policies on obesity
159 prevention for school children among the school administrators, the implementation
160 status, and factors influencing its implementation.

161

162 **METHODS**

163 Policies are referred to written directives, guidelines, manuals and programs related to
164 obesity prevention.¹⁸

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167 *Questionnaire development*

168 In-depth interviews (IDI) with key personnel were conducted by the principal
169 investigator to identify the available policies related to obesity prevention for school
170 children as well as to understand its process of implementation in Malaysia. The
171 interviews were conducted from May to August 2014. The respondents were two
172 policy makers from the Non-Communicable Disease division, Ministry of Health
173 headquarters; seven school health team members (i.e. four medical doctors, two
174 nutritionist and one school nurse) at district level and six school administrators from
175 Malay-medium national primary schools (SK) (n=2) and non-Malay-medium primary
176 schools (also known as vernacular schools) (n=4, two from SJKT and two SJKC
177 respectively). The vernacular schools included the Tamil-medium national school
178 (SJKT) and Chinese-medium national school (SJKC). The interviews were conducted
179 at the interviewees' premises to allow the interviewer to observe the actual environment
180 and better understand any specific issues when they were raised.

181

182 Purposive sampling method was used in identifying and selecting participants for the
183 IDIs. The IDIs were conducted using the guidelines designed by the research team. The
184 guidelines consisted of 14 open-ended items with probing questions for a systematic
185 interview (refer to appendix). The items included understanding the policies that are
186 currently being implemented in primary schools, how policies were implemented and
187 what were the factors that might facilitate or act as barriers to the implementation.
188 Interviews were conducted until content saturation was achieved (when similar

189 comments were consistently repeated). Oral informed consents were given by the
190 participants for permission to record all interviews. All tape recordings were transcribed
191 verbatim. The transcriptions were imported into Nvivo7 for coding and analysis.
192 Finally, the findings from the IDIs were used to design and develop an online
193 questionnaire using the Google application. The created Google online questionnaire
194 enabled us to compile the survey responses into the Excel spreadsheet for analysis.

195

196 The questionnaire included 32 items covering the topics on awareness,
197 implementation process and factors that impeded or facilitated the implementation of
198 the policy or guidelines. Awareness was measured by the responses of ‘yes, no, not
199 sure’. The questions on implementation focused on items considered relevant to
200 predicting the extent to which the school complied with the existing policies; while the
201 questions on factors that facilitated or acted as barriers were based on the challenges
202 faced in implementing the policies. The internal consistency (Cronbach alpha) of the
203 questionnaire was 0.80.

204

205 The questionnaire was written in the national (Malay) language and was validated by
206 three experts in the similar field of study for face and content validation. Pre-testing
207 was carried out among 11 school administrators who were not involved in the study.

208

209 ***Study design and Sampling Methods***

210 This was a cross-sectional study conducted from October 2014 to February 2015
211 involving all primary schools (attended by children age 7-12 years old) in the state of

212 Selangor Darul Ehsan. Universal sampling was carried out where all primary schools in
213 the urban and rural areas of Selangor (n=641) were invited to participate.

214

215 ***Data collection***

216 A self-administered online questionnaire was used to assess the respondents'
217 awareness on the existing policies related to obesity prevention among school children.
218 All primary school administrators in Selangor were invited to participate in the study
219 via emails and further followed up using official letters and telephone communication.

220 After agreement to participation was obtained, the school administrators
221 (headmaster/assistance headmaster/physical education teacher) were briefed (via
222 telephone communication) about the purpose of the research. Upon receiving verbal
223 informed consent and verification of the schools' email addresses, the questionnaire was
224 emailed to the schools. The researcher made follow-up calls every two weeks to ensure
225 the school administrators completed and returned the questionnaires.

226

227 ***Statistical Analysis***

228 All compiled data in the Excel spreadsheet were exported into Statistical Package for
229 the Social Sciences (SPSS) for Windows, version 22. Descriptive statistics were used
230 to describe the awareness and factors that facilitated or acted as barriers to policy
231 implementation. Logistic regression was used to examine the association between
232 schools' characteristics and policy implementation. The significant level was preset
233 at $p < 0.05$.

234

235 ***Ethics clearance***

236 Ethics clearance (Reference No: 989.27) was obtained from the University of Malaya
237 Medical Centre Research Ethics Committee. Permission to conduct research at the
238 schools was obtained from the Ministry of Education (Reference No:
239 KP(BPPDP)603/5/JLD.13 (234). Informed consent was received from all the
240 respondents.

241

242 **RESULTS**

243 The online survey was completed by 447 out of 641 school administrators, giving a
244 response rate of 70%. Each school was represented by one respondent. Among the
245 respondents, 56.6% were assistant headmasters, 36.9% were headmasters and 6.5%
246 were physical education teachers. Among all the schools, 67.6%, 17.2%, and 15.2%
247 were SK, SJKC and SJKT, respectively. Based on geographical location, rural and
248 urban schools were 42.3% and 57.7%, respectively. There was no difference in school
249 type and geographical location between the responded and non-responded schools.

250

251 **Awareness and Status of Policy Implementation**

252 The existing policies related to obesity prevention among school children were mainly
253 developed by the Ministry of Education in collaboration with the Ministry of Health and
254 local councils (Table 1). All national policies that were developed for the Ministry of
255 Education were informed to all the government schools through circulars by their
256 respective state education offices. Implementation refers to the execution of policies.
257 There were six steps in the policy implementation identified during the IDIs. The

258 implementation of policies depends on the resources needed and availability of
259 resources at schools. The timing of policy implementation varied. Some were
260 implemented as soon as directives were given, such as healthy school canteen
261 guidelines implemented by the canteen operators. However, some were implemented in
262 the next academic year, such as “1 Sport 1 Student” when the school children were
263 involved as there might be no vacant slots in the current school calendar. Monitoring of
264 policy implementation was carried out by the stakeholders through annual meetings and
265 written reports.

266 [Insert Table 1]

267

268 It is important for the implementers to be aware and get familiarized with the school-
269 based-policies before any implementation process can be optimized. Figure 1 shows the
270 level of awareness and status of full implementation of individual policies (P1 to P5)
271 related to obesity prevention for school children. The majority of the respondents (96%)
272 reported a good awareness and familiarity with the existing policies. However, the
273 status of policy implementation was only acceptable, with P3 found to be highest (72%)
274 followed by P1 (64.7%), P5 (56.6%), P2 (55.3%) and P4 (51%).

275 [Insert Figure 1]

276

277 There was no difference in the status of policy implementation according to the types of
278 schools (Table 2). Similarly, the rural and urban schools also showed no difference in
279 the implementation of all policies, except for the Guidelines for Food and Drinks Sold

280 at the School Canteen (P3). Rural schools had higher odds of implementing the
281 Guidelines for Food and Drinks Sold at the School Canteen (P3) than urban schools
282 (OR: 1.74, 95% CI: 1.13, 2.69).

283 [Insert Table 2]

284

285 **Facilitators and Barriers**

286 Table 3 shows the factors that facilitated or acted as the barriers to the
287 implementation of the existing policies. Most of the school administrators reported that
288 policy implementation was a priority (82.8%) and they had taken responsibility to
289 implement the policies (71.1%). They also reported familiarity and had sufficient
290 knowledge in the implementation process (60.6%). Overall, the school administrators
291 had received good support from their staff (86.6%) and school canteen operators
292 (81.7%) in policy implementation. They also received co-operation from the majority of
293 their students (77.2%). Furthermore, 51.2% of the school administrators reported that
294 their schools had sufficient funding to carry out the given mandate. Factors that acted as
295 barriers to the implementation of the existing policies were lack of equipment (78.5%),
296 followed by having limited time (71.8%), insufficient training (71.6%), no penalty
297 given for non-compliance (61.1%), too much paperwork (60%) and lack of support
298 from parents and community (51.7%).

299 [Insert Table 3]

300

301 **DISCUSSION**

302 We found that majority of the school administrators were familiar and understood the
303 implementation process of the existing policies. However, only two policies; Policy 1
304 student 1 sport (P1) and Guidelines of Food and Beverage sold at the school canteen
305 (P3) were implemented by more than 60% of the schools, which could be considered as
306 satisfactory. It is difficult to get a hundred percent implementation of any policy. Durlak
307 and colleague (2008) suggested that a perfect or near perfect policy implementation was
308 unrealistic. Positive results to program adaptation have often been obtained with
309 implementation levels around 60% to 80%, while no study has documented a 100%
310 implementation.¹⁹ In our study, the implementation of other policies (P2, P4, and P5)
311 was slightly lower than 60%. The implementation of the Guidelines in weight
312 management of school children (P2) involved measurement of students' BMI twice a
313 year. However, issues with lack of equipment (weighing scale and stadiometer) and
314 limited time had made its implementation difficult in some schools. In addition, the
315 banning of the sales of food and beverages by mobile vendors outside the school
316 perimeters (P4) needs the involvement and reinforcement of the local councils, while
317 the School Health Promotion-Young Doctors Program (P5) was made optional for
318 implementation by the authority.

319

320 We also found no difference in the status of implementation according to the location
321 of schools, except for the policy on 'Guidelines of Food and Beverage sold at the school
322 canteen' (P3). These guidelines aimed to guide the canteen operators and school
323 administrators on the list of foods and beverages that are permitted, not encouraged and
324 prohibited at the school canteens, and to provide information on the amount of energy in

325 food by displaying the total calories, as well as to highlight the methods of monitoring
326 on selling food and drinks at the school canteens.¹⁶ These guidelines had been
327 incorporated into the Healthy School Canteen Program and were distributed to all the
328 schools in Malaysia. The canteen operators found the guidelines useful in preparing
329 healthy meals for the school children. However, the foods and beverages recommended
330 in the guidelines were not popular among the school children as these food and
331 beverages tended to be lower in fat, sugar, and sodium. Therefore, canteen operators
332 would tend to sell foods and beverages preferred by the school children, such as fast
333 foods.²⁰ The compliance to this policy (P3) was better at the rural compared to the urban
334 schools since urban schools are usually located near the commercial areas which
335 provide easy access to unhealthy food and snacks. With the high competition from the
336 surrounding area and high demands from the school children, the urban school canteen
337 operators may have opted to sell foods and beverages preferred by the school children.
338 Although healthy food choices and eating behavior are incorporated in the school co-
339 curriculum, the school authorities should reinforce its importance. In addition, it would
340 be good if the government could subsidize healthy foods which are usually more
341 expensive so that the canteen operators are ensured with better income. Furthermore,
342 the schools are encouraged to ease the financial burden of the canteen operators by
343 waiving or reducing the canteen premise rental or subsidize the price of healthy food
344 choices such as whole-meal bread, fruits, vegetables and dairy products.

345

346 In this study, the co-operation from staff and school canteen operators in policy
347 implementation was found to be above 80%. However, there was less support from the

348 parents and the community. Inter-sectoral cooperation is one of the key factors in
349 successful policy implementation²¹. Having parents to be actively involved would
350 improve policy implementation. Parents need to be empowered through the Parents-
351 Teachers Association that should promote and conduct school activities and programs
352 related to healthy lifestyle. Although the school administrators showed their full
353 commitment and had sufficient knowledge on policy implementation, they still need
354 additional support in providing the facilities/equipment, as well as provide sufficient
355 training to their staff. Moreover, the school administrators reported that the
356 implementation of policies involved too much paperwork which increased their work
357 burden in addition to the workload from their academic commitment. Similar results
358 have also been reported by other studies which assessed the facilitators (e.g. leadership
359 and effective communication)²² and barriers (e.g. parental support)²³ of policy
360 implementation.

361

362 We did not find funding to be a barrier to policy implementation. Most of the
363 policies, except for P2, did not require financial assistance for implementation.
364 Furthermore, most of the programs were supposed to be implemented by the school
365 canteen operators. Identified factors that acted as barriers were modifiable and thus
366 present clear opportunities for improvement in the implementation of policies. The issue
367 on additional administrative work given to the teachers and time taken by them in
368 recording the measurements of weight and height which then need to be submitted to
369 the ministry could avoid duplication if the data could be directly keyed-in to an online
370 system using a portable gadget. The issue of lacking in facilities and equipment raised

371 by the school administrators could be due to the poor maintenance of those facilities,
372 which may be addressed by outsourcing its maintenance service. These
373 recommendations could be considered by the policymakers in re-strategizing future
374 planning.

375

376 **Strengths and Limitations**

377 This is the first study that assessed the implementation of related policies in Malaysia. It
378 involved multiple stakeholders such as policymakers, school health team members, and
379 school administrators which their views were included. On the other hand, this was a
380 cross-sectional study, based upon perceptions of the respondents. In addition, we did
381 not assess whether awareness and implementation of policies made a difference in
382 children's dietary and physical activity behaviors as well as the prevalence of obesity.
383 However, our findings will assist researchers and policy makers in conducting further
384 studies in improving the implementation of the current related policies and guidelines.
385 Although only public schools from one state were studied, these schools were
386 representative of schools from other states as the set-up of all the public schools in
387 Malaysia is similar.

388

389 **Conclusion**

390 The majority of the school administrators were aware of the existing policies related to
391 obesity prevention among primary school children; however, the implementation was
392 only satisfactory. The identified barriers to policy implementation were modifiable and
393 thus the stakeholders should consider re-strategizing plans in overcoming them.

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397 **SO WHAT? Implications for Health Promotion Practitioners and Researchers**

398 **What is already known on this topic?**

399 The effectiveness of school-based policies against childhood obesity depends on their
400 implementation. Therefore, evaluation of policy implementation is important. However,
401 to date, only a few studies have examined the factors that facilitated or acted as barriers
402 to the implementation of existing policies related to obesity prevention among school
403 children.

404

405 **What does this article add?**

406 This study assessed and examined the facilitators/barriers to the implementation of
407 existing policies related to obesity prevention among school children in primary schools
408 in Malaysia.

409

410 **What are the implications for health promotion practice and research?**

411 Our study found that some of the identified factors were modifiable and thus present
412 clear opportunities for improvement in the implementation stage.

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