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Healthy living practices in families and child health in Taiwan

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Abstract
Objectives The aim of this study was to examine the hypothesis that inexpensive and feasible healthy living practices in families, particularly in disadvantaged families, can promote the health of children.

Methods The dataset was obtained from the Taiwan Birth Cohort Study and comprises a nationally representative sample of 19,712 3-year-old children in Taiwan. The Child Healthy Living Practices in Families (CHLPF) Index, which rates various items of personal hygiene, vegetable and fruit consumption, physical activity, time spent viewing television, and exposure to smoking, was created, and a logistic regression analysis was conducted to test the hypothesis.

Results Higher CHLPF levels were significantly and consistently associated with better child health in families of all income levels. More specifically, the prevalence of ill health in children from poor families with a high CHLPF level was actually lower than that in children from affluent families with a low CHLPF level.

Conclusions The implementation of low-cost and practical healthy living practices in families can effectively improve child health, especially that of disadvantaged children.

Keywords Healthy living practices · Social inequality · Child health · Family setting

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Introduction

The Ottawa Charter for Health Promotion (World Health Organization 1986) stated that "Health is created and lived by people within the settings of their everyday life; where they learn, work, play and love". Family is a primary influence on child health and development and, consequently, the most important setting where children learn and develop health routines, habits, attitudes, and social behaviors (UNICEF 2007; Wen 2008; Turney et al. 2013). Parents are responsible for establishing healthy habits and decisions related to their children's healthy living styles, creating a supportive environment, educating their children about health, and engaging their children in their own health and well-being (Christensen 2004). The pursuit of healthy living has been associated with the "logic of choice" (Mol 2008), which refers to a mode of organizing perspectives and actions and of understanding the relationship between individuals, environments, and daily lives, as well as dealing with knowledge and practices of being healthy. Empirical studies have shown that health-related habits and perceptions attained through healthy living in a family enable children to develop everyday healthy practices that significantly affect their health

outcomes (Song et al. 2013; Turney et al. 2013; van Grieken et al. 2014) and quality of life (Dwyer et al. 2009).

Child health, however, is obviously affected by family socioeconomic factors that are closely associated with whether people "know about, have access to, can afford, and are motivated to engage in health-enhancing behaviors" (Phelan et al. 2004, p. 267). From the perspective of social determinants, family poverty has been recognized as a primary cause of ill health in children (Bradley and Corwyn 2002; Marmot 2005). In the USA, children from poor families are 4.73-fold more likely to have poor health than children from affluent families (Larson and Halfon 2010; Bloom et al. 2013), while in the UK, the former are 6.7-fold more likely to have poor health than children from affluent families (Pearce et al. 2013). Children from poor families are indeed experiencing an increasing likelihood of adverse health outcomes, such as asthma, allergies (Turney et al. 2013), lower respiratory illness (Aber et al. 1997), and various infectious diseases (World Health Organization 2012). While the social and physical disadvantages of poverty have profound and pervasive negative effects on children's overall well-being, the question remains as to whether inexpensive and practical healthy living practices in families can reduce the socioeconomic disparity in their children's health.

Health behavior is a major mediator between social determinants and child health outcomes (Bradley and Corwyn 2002). Therefore, as a means to reduce the impact of health inequality, children can be taught health practices in the family setting which will enable them to take proper care of their health on a daily basis. The importance of healthy living, defined as everyday health practices such as proper eating habits, physical activities, low screen time, among others, has been recognized and empirically studied by national programs in Canada (Public Health Agency of Canada 2015), Australia (Lindsay 2010), and Europe (Ford et al. 2009). Targeted efforts to enhance health and reduce health disparity in children requires developing beneficial living practices in the family setting, especially in low-income families. Yet the World Health Organization's (2015) guidelines for healthy settings only emphasize healthy schools, work environments, and community health centers, where the "healthy family" or "healthy home" is not mentioned as a targeted environment for establishing health practices. The practical advantages of the family setting for health maintenance efforts and the convenience as well as fewer expenses involved in supporting health habits are overlooked. Therefore, in this study we have addressed the research gaps and discussed the effect of healthy living practices in families on child health. The objectives of this study were to examine (1) the associations between healthy living practices in families and socioeconomic factors, (2) the relationship between healthy living practices in families and child health while controlling for other socioeconomic status factors, and (3) whether healthy living practices in families affect child health at all family income levels.

Methods

Sample

This study uses the dataset from the Taiwan Birth Cohort Study (TBCS), which was the first large-scale, longitudinal study on a 1-year-long birth cohort in Taiwan, initiated in 2005. The TBCS focused on documenting children's health and developmental trajectories, investigating the social determinants of children's health and well-being, and examining the early determinants of adult health from the life course perspective. Two-stage stratified random sampling was used to select 24,200 children born in 2005 from the National Birth Report Database (sampling rate 11.7 %) to be a nationally representative cohort. Mothers or primary caregivers of 21,248 (response rate 87.8 %) 6-month-old babies were recruited to complete the baseline survey. Three waves of follow-up surveys were conducted through face-to-face interviews with the mothers or primary caregivers of children at 18 months, 3 years, and 5.5 years (response rates 94.9, 93.7, and 92.8 %, respectively). The TBCS collected a wide range of information on the health and development, lifestyles, parenting, child care, and social and physical environments of all participating children at various developmental stages. The present study uses the data from the third-wave follow-up survey of 19,910 children (response rate 93.7 %) aged 36 months. The final representative sample, after excluding 198 missing datasets, comprised 19,712 valid responses.

Measures

The Child Healthy Living Practices in Family Index

Identifying the health-related practices used by parents and embedded in the daily lives of children is crucial for defining healthy living by children in the family setting (Christensen 2004). The Child Healthy Living Practices in Family (CHLPF) Index has been developed to evaluate the degree to which children engage in healthy living practices that affect their health. The CHLPF Index is a composite variable comprising five elements retrieved from the TBCS survey; these elements were originally ranked on a Likert scale but were subsequently recoded as dichotomous elements. The cutoff point was determined according to an iterative test and stronger relationships to the outcome. The five elements are (1) vegetable and fruit consumption

(whether vegetables and fruits are eaten daily); (2) physical activity (whether physical activities are conducted daily); (3) personal hygiene (whether hands are washed before meals and after using the bathroom); (4) TV viewing (whether TV viewing is <2 h a day); (5) second-hand smoke exposure at home (yes or no). These elements, which are considered standard health practices, are highly associated with the health of children (Gorin et al. 2014; van Grieken et al. 2014) and are consistent with approaches for enhancing health and preventing disease (People 2011). In addition, the CHLPF Index provides integrated information on health behaviors attributable to children's health and reveals the supportiveness and healthiness of a family environment. All five of these elements were measured using a dichotomized scale, and the scores were summed and stratified into low (score $\leq$1), mid-low (score 2), mid-high (score 3), and high (score $\geq$4) CHLPF levels. The construct represents how well children practice their healthy living routines in their own family setting.

Control variables

The control variables for the mother-rated health of children were the children's sex, family structure (2- or 1-parent family, including divorced, separated, or widowed), family income (low, middle, or high), and maternal and paternal education levels (junior high school and below, senior high school, junior college, university, or graduate school).

Mother-rated health of children

The mother-rated health of children represents the children's overall health status and was originally measured using the question: "Your child is now about 3 years old. Overall, how would you rate your child's health status? Very good? Good? Fair? Not good? or Poor?". Maternal-rated health is a commonly used measure of children's health status in pediatric care (Bzostek and Beck 2011). This variable was recoded to a dichotomized scale as good or poor health according to maternal or mother-rated perspectives.

Analyses

First, to verify the validity of the CHLPF Index and construct validity assessment methods, we employed explanatory factor analysis (EFA), confirmatory factor analysis (CFA), and convergent validity methods. In addition, descriptive statistics were used to examine differences in CHLPF Index scores within the sample population. The independent variables that were significantly associated with the CHLPF Index according to the chi-square tests were used in a univariable logistic regression analysis to determine the crude odds ratios (ORs) of the mother-rated health of children. Subsequently, a multivariate logistic regression model was used to examine the relationships between the CHLPF Index and child health while controlling for each child's sex, family structure, family income, and maternal and paternal education levels. Finally, to understand the influence of the interrelationships between family income levels and the CHLPF Index on child health, the prevalence rates of poor health in children within different categories of the CHLPF Index and in families with different income levels were calculated and compared using chi-square tests. The analyses employed the Statistical Package for Social Sciences (SPSS) statistical software version 20.0 package (IBM Corp., Armonk, NY) and AMOS version 20.0 (IBM Corp.).

Results

The study population of 19,712 children aged 36 months included 10,363 (52.6 %) boys and 9,349 (47.4 %) girls. For the CHLPF construct, an EFA was used as a precursor to latent variable modeling and CFA. In EFA, the construct explained 28.21 % of the variance, exhibiting an eigenvalue of 1.41. The factor met the minimum eigenvalue criterion of 1.0, and the screen plot indicated a clear separation between the first factor (eigenvalue 1.41) and other factors (eigenvalues <1.0). Bartlett's test was Sig (0.000), indicating that the correlation matrix was not an identity matrix. The loadings of the five items were 0.605, 0.531, 0.475, 0.588, and −0.437. In addition, CFA was performed to determine the goodness of fit between the hypothesized model and the sample data. For the CHLPF Index, the obtained χ^2 was 66.33 ($p < 0.01$) and the ratio of χ^2 to degrees of freedom (*df*) was 13.27. The Root Mean Square Error of Approximation (RMSEA; 0.025) indicated a small amount of unexplained variance and a good model fit (Steiger 1990). The Comparative Fit Index (CFI; 0.967) and Normed Fit Index (NFI; 0.965) also indicated a good fit (Bentler 1992). Bayesian estimation revealed that the overall convergence statistic was 1.000, indicating perfect convergence.

The Pearson chi-square tests were used to compare the percentage of children in each CHLPF group between demographic categories (Table 1). Children who had low CHLPF levels composed 35.9 % of the sample, and more boys than girls had low to mid-low CHLPF levels [$\chi^2(3) = 15.54$, $p = 0.001$]. Among the participants, 12 % reported that their income was low in the preceding 12 months, and more than half of the children from these

Table 1 Distribution of socioeconomic factors and child healthy living practices based on the Child Healthy Living Practices in Family (CHLPF) Index in Taiwan, 2008

Variables	Total participants ($n = 19{,}910$)	Child Healthy Living Practices in Family (CHLPF) Index				p value
		Low ($n = 5257$, 26.7 %)	Mid-low ($n = 6876$, 34.9 %)	Mid-high ($n = 5158$, 26.2 %)	High ($n = 2421$, 12.3 %)	
Sex						0.001
Boys	10,363 (52.6)	3742 (36.1)	3340 (32.2)	2336 (22.5)	945 (9.1)	
Girls	9349 (47.4)	3328 (35.6)	2908 (31.1)	2108 (22.5)	1005 (10.7)	
Family structure						<0.001
Single parent	947 (4.8)	407 (43.0)	308 (32.5)	173 (18.3)	59 (6.2)	
Two parents	18,765 (95.2)	6663 (35.5)	5940 (31.7)	4271 (22.8)	1891 (10.1)	
Family income						<0.001
Low	2,343 (11.9)	1206 (51.5)	648 (27.7)	350 (14.9)	139 (5.9)	
Middle	10,172 (51.6)	3971 (39.0)	3181 (31.3)	2178 (21.4)	842 (8.3)	
High	7197 (36.5)	1893 (26.3)	2419 (33.6)	1916 (26.6)	969 (13.5)	
Maternal education						<0.001
Junior high school and below	2805 (14.2)	1417 (50.5)	811 (28.9)	431 (15.4)	146 (5.2)	
Senior high school	7881 (40.0)	3139 (39.8)	2452 (31.1)	1600 (20.3)	690 (8.8)	
Junior college	4835 (24.5)	1469 (30.4)	1628 (33.7)	1214 (25.1)	524 (10.8)	
University and graduate	4191 (21.3)	1045 (24.9)	1357 (32.4)	1199 (28.6)	590 (14.1)	
Paternal education						<0.001
Junior high school and below	2674 (13.6)	1354 (50.6)	792 (29.6)	396 (14.8)	132 (4.9)	
Senior high school	7860 (39.9)	3219 (41.0)	2425 (31.2)	1551 (19.7)	636 (8.1)	
Junior college	4164 (21.1)	1281 (30.8)	1372 (32.9)	1040 (25.0)	471 (11.3)	
University and graduate	5014 (25.4)	1216 (24.3)	1630 (32.5)	1457 (29.1)	711 (14.2)	
Missing datasets	198					

Data are presented as the number (of participants), with the percentage of total for that category given in parenthesis

families had low CHLPF levels. CHLPF levels exhibited a graded association with family income, with higher income related with higher CHLPF levels [$\chi^2(6) = 667.89$, $p < 0.001$]. Almost half of the children came from families in which the mothers (45.8 %) or fathers (46.5 %) had at least a junior college degree, and children from these families were more likely to have high CHLPF levels than those from families with lower parental education levels [$\chi^2(9) = 712.19$, $p < 0.001$ for maternal education; $\chi^2(9) = 843.11$, $p < 0.001$ for paternal education].

Table 2 lists the ORs between the CHLPF levels and the mother-rated health of children. In terms of children's health, significant differences were observed among CHLPF levels [$\chi^2(3) = 189.120$, $p < 0.001$]. Compared with children with low CHLPF levels, those who were rated as having mid-low, mid-high, and high CHLPF levels were less likely to have poor mother-rated health (OR 0.79, 0.62, and 0.47, respectively). A graded association between CHLPF levels and the mother-rated health of children was evident, with children with higher CHLPF levels more likely to be healthier.

Multiple logistic regression models were used to examine the associations between CHLPF levels and the perceived health of the children while controlling for sex of the child, family structure, family income, and parental education. Similar to the unadjusted model, the adjusted model showed that, compared with children with low CHLPF levels, children with mid-low, mid-high, or high CHLPF levels were less likely to have poor health (OR 0.80, 0.63, and 0.48, respectively). A 52 % decrease in the odds of poor health was evident for children with high CHLPF levels compared with those with low CHLPF levels.

Table 3 shows the prevalence of children with a poor mother-rated health status for each family income level and CHLPF level. Analysis with the Pearson chi-square test was conducted to compare the prevalence of poor mother-rated health status between CHLPF levels at all income levels, and the differences were significant [$\chi^2(3) = 189.16$, $p < 0.001$]. The prevalence of poor mother-rated health for children with low CHLPF levels [27.2 %, 95 % confidence interval (CI) 26.2–28.3] was

Table 2 Crude and adjusted odds ratio of CHLPF Index levels and mother-rated health of children in Taiwan, 2008

Variables	Mother-rated health of children (rated "poor health")			
	Crude OR	95 % CI	Adjusted OR	95 % CI
CHLPF index level				
Low	1.00 (reference)		1.00 (reference)	
Mid-low	0.79	0.73, 0.85	0.80	0.73, 0.86
Mid-high	0.62	0.56, 0.68	0.63	0.57, 0.69
High	0.47	0.41, 0.54	0.48	0.42, 0.56
Sex				
Boy	1.00 (reference)		1.00 (reference)	
Girl	0.85	0.79, 0.90	0.85	0.79, 0.90
Family structure				
Single parent	1.00 (reference)		1.00 (reference)	
Two parent	0.96	0.82, 1.12	0.96	0.82, 1.12
Family income				
Low	1.00 (reference)		1.00 (reference)	
Middle	0.80	0.71, 0.89	0.82	0.74, 0.92
High	0.65	0.57, 0.74	0.69	0.61, 0.79
Maternal education				
Junior high school and below	1.00 (reference)		1.00 (reference)	
Senior high school	0.80	0.69, 0.93	0.76	0.65, 0.89
Junior college	0.98	0.87, 1.10	0.96	0.85, 1.08
University and graduate	1.06	0.95, 1.19	1.05	0.94, 1.12
Paternal education				
Junior high school and below	1.00 (reference)		1.00 (reference)	
Senior high school	1.12	0.97, 1.30	1.04	0.89, 1.20
Junior college	1.02	0.91, 1.15	0.97	0.86, 1.09
University and graduate	0.97	0.86, 1.08	0.95	0.84, 1.06

ORs Odds ratios, *95 % CI* 95 % confidence interval

Table 3 Prevalence of children with poor mother-rated health of children within different combinations of family income and CHLPF Index levels in Taiwan, 2008

CHLPF Index levels	Prevalence of poor mother-rated health of children			
	Total ($n = 19{,}712$[a])	High income ($n = 7197$)	Middle income ($n = 10{,}172$)	Low income ($n = 2343$)
Low ($n = 7070$)	27.2 (26.2, 28.3)	25.0 (23.1, 27.0)	27.5 (26.1, 28.9)	30.0 (27.4, 32.5)
Mid-low ($n = 6248$)	22.7 (21.7, 23.8)	21.4 (19.7, 23.0)	23.2 (21.7, 24.7)	25.6 (22.3, 29.0)
Mid-high ($n = 4444$)	18.7 (17.6, 19.9)	17.0 (15.3, 18.6)	19.4 (17.7, 21.0)	24.6 (20.0, 29.1)
High ($n = 1950$)	15.0 (13.4, 16.6)	14.7 (12.4, 16.9)	15.1 (12.7, 17.5)	16.6 (10.3, 22.8)
Total	22.7 (22.1, 23.3)	20.3 (19.3, 21.2)	23.4 (22.6, 24.2)	27.1 (25.3, 29.0)

Data are presented as a percentage, with the 95 % CI given in parenthesis

[a] Missing data has been excluded

significantly higher than that for children with mid-low (22.7 %, 95 % CI 21.7–23.8), mid-high (18.7 %, 95 % CI 17.6–19.9), and high (15.0 %, 95 % CI 13.7–16.6) CHLPF levels (Bonferroni $p < 0.05$ for all pairwise comparisons).

Significant differences in children's poor mother-rated health were also observed between income levels [$\chi^2(2) = 53.51$, $p < 0.001$]. The prevalence of children with poor mother-rated health from low-income families (27.1 %; 95 % CI 25.3–29.0) was significantly higher than

that of those from middle-income families (23.4 %; 95 % CI 22.6–24.2, $p < 0.05$) and high-income families (20.3 %; 95 % CI 19.3–21.2, $p < 0.05$). Regarding the prevalence of poor child health, the discrepancy between the CHLPF levels was larger in the low-income group than in the high-income group. The highest prevalence of children with poor mother-rated health was observed in the group of children who were in low-income families and had low CHLPF levels. In addition, the prevalence of poor mother-rated health for children of low-income families with high CHLPF levels was lower than that for children of high-income families with low CHLPF levels. This discrepancy suggested that healthy living practices in families are crucial for enhancing child health, even for children with socioeconomic disadvantages.

Discussion

The results of our study demonstrate that healthy living practices in the families included in the study were strongly associated with child health. Although we did identify an impact of socioeconomic factors on healthy living practices levels, we also found that child health can be effectively promoted even in families faced with socioeconomic constraints through structural implementation of inexpensive and practical healthy living practices. The outcome is even more positive for children from disadvantaged families.

Social inequalities in early life can cause adverse health outcomes (Commission on Social Determinants of Health 2008; McLoyd 1998; Pearce et al. 2013), where gradient effects of these inequities can exist throughout the child's lifespan (Early Child Development Knowledge Network 2007). Family socioeconomic factors have been recognized as primary influences on the health of children (Phelan et al. 2004). In our study, we noted statistically significant differences in CHLPF levels according to gender, family structure, parental education level, and family income. For example, boys were more likely to have poorer health practices than girls, which is consistent with prior studies (Govindan et al. 2013; Santiago et al. 2013). In addition, we found that children from single-parent families tended to have poor health practices. Previous studies have reported that children from single-parent families are at an increased risk for behavioral problems and poor health (Dawson 1991; Weitoft et al. 2003; Pearce et al. 2013), possibly resulting from inadequate social or human capital and limited socioeconomic resources (Thomson et al. 1994; Bronte-Tinkew and DeJong 2004; Brown 2004). In this study we also identified a significant gradient between parental education levels and CHLPF levels (Table 1). Education offers individuals the opportunity to pursue knowledge and access resources for promoting health (Herd et al. 2007) because of enhanced health literacy. Through reading and acquiring a greater capacity for understanding and acting on health care information, health literacy empowers people to improve their health (Desai and Alva 1998; Kickbusch 2001; Currie 2009). Consequently, a higher parental education level may be a crucial facilitator in translating and processing health information to promote children's everyday health practices. These findings are accordance with those from previous studies.

Among socioeconomic factors, family income has been treated as a representative factor (Brooks-Gunn and Duncan 1997; Coleman 1988). People living in poverty tend to have poor health, and people with poor health have a higher likelihood of remaining in poverty (Lund et al. 2011). This negative cycle is often repeated through generations and is closely associated with substantial economic and social costs. It therefore needs to be broken during childhood to prevent continuing gradient effects of poverty and economic inequity.

In the context of our results, the use of inexpensive and feasible health practices in families (CHLPF Index) is clearly of importance for the promotion of child health, especially children in disadvantaged family settings. Approximately 61.6 % of children in our study scored inadequate CHLPF levels, and a substantial gradient in the relationship between family income and CHLPF levels was observed (Table 1). The prevalence of children with low CHLPF levels was 51.5 % in low-income families, compared to 26.3 % in high-income families; this clearly demonstrates that children from families with lower income levels tend to have suboptimal healthy living practices. This distribution also indicates that there is room for improvement and that practical health practices should be applied to ensure overall health and well-being.

In response to gaps in our knowledge, one of our aims was to examine the prevalence of children with poor health in relation to family income and CHLPF levels. The assumption of an association between lower CHLPF levels and inadequate healthy living practices in families leading to poor health was tested using a logistic regression analysis. The result of this analysis, shown in Table 2, indicates that the children with high CHLPF levels were 52 % less likely to have poor health than those with low CHLPF levels. This finding verifies the assumption and supports the fact that encouraging health living practices in families is effective and necessary. According to prior studies, family income is a crucial factor for acquiring social capital and promoting child well-being and health (Coleman 1988) because affluent families are more capable of providing their children with high-quality healthcare resources and living in more socially and physically desirable environment (Brooks-Gunn and Duncan 1997; Wen 2008). Children from poor families are approximately five- to

sixfold more likely to have poor health and become a substantial health burden on their already disadvantaged families and a public healthcare burden on their communities (Larson and Halfon 2010; Bloom et al. 2013; Pearce et al. 2013). Overall, children with low CHLPF levels had the highest prevalence of poor mother-rated health, and the differences between levels are statistically significant at the 0.05 level (Table 3). The gradients remained consistent among all income levels, and the differences became more evident as the income level declined. Healthy living practices in families reduced the prevalence of poor health in children, and the effect was more evident for children in low-income families. These results are consistent with previous assertions that healthy living practices can improve health (World Health Organization 2015) and that healthy living practices in families support the establishment of a healthy lifestyle for children (Christensen 2004; Santiago et al. 2013). More importantly, our findings demonstrate that the prevalence of ill health in children from poor families with high CHLPF levels was actually lower than that for children from rich families with low CHLPF levels. These results are of major importance in that they demonstrate that healthy living practices in families do actually improve child health, even when the family setting is not ideal or affluent. For disadvantaged families, inexpensive and practical familial healthy living practices can facilitate mitigation of the impact of health disparity on children, and the positive outcomes can be expected to break or at least reduce the negative cycle between poverty and poor health.

In addition, our findings have exciting and significant educational implications. Health education programs should be created to emphasize the benefit to children and their parents of promoting healthy living practices in the family setting, with a particular emphasis on disadvantaged families. The purpose of such educational programs should be to strengthen parents' health literacy and encourage them to develop beneficial health routines for children. As noted above, parents are responsible for establishing healthy routines for their children, as well as for making practical choices which can effectively improve child health. We suggest that such programs should also be implemented and promoted by family practitioners, daycare facilities, and local governments in order to reach as many families as possible. Ultimately, children need to be tracked longitudinally to examine the influence of such interventions on their healthy living practices and lifelong health conditions. Our ultimate aim is to establish such a plan as a future research trajectory.

The present study had several limitations. First, cross-sectional data were used and no causal inferences can therefore be made. Future studies should be required to verify the directional causality between associations. In addition, all measures of child health were reported by parents; as such, these reports are subject to potential reporting bias. Despite these limitations, this study contributes to the literature on healthy living practices in families and the link to child health. To our knowledge, few studies have discussed child health practices and the promotion of child health within the family setting. This study thus encourages further research and practices in the development of family healthy living intervention programs that can reach disadvantaged children and families.

Conclusions

Developing a capacity for health and well-being through the appropriate health practices indicates the value of health promotion (Breslow 1999). The family setting is the primary setting where individuals develop everyday health-related capacities and practices (Christensen 2004). Each and every child is entitled to have good health regardless of the socioeconomic status of the family, and every family should be able to provide a desirable setting in which children can establish positive and beneficial health practices. Although social inequality is not a state that can be rectified instantly, minor changes in healthy living practices do influence a child's basic health and therefore should be initiated. Based on the results of our study, we propose using practical and inexpensive healthy living practices in families according to the belief that fundamental healthy living styles can eliminate health inequality and enable all individuals to develop good health. Hence, advocating healthy living practices in families may be a small step, but substantial effects on the population will be visible.

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Compliance with ethical standards

Conflict of interest There are no conflicts of interest associated with this study.

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