
The link between parenting approaches and health behavior: a systematic review

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Abstract

The familial home environment, where parenting takes place, plays an important role in the health behaviors that children and adolescents engage in and has implications on health and well-being in later life. Lifestyle-related behaviors predispose children and adolescents to the global burden of non-communicable and other lifestyle-related diseases. This review therefore examined and described previous studies looking at the associations between health behaviors and parenting approaches. It suggests that engagement in health behaviors, which promotes overall health and well-being, was associated with autonomy, supportive parenting, parental encouragement, behavior control, parental nurturance, warmth and responsiveness, and parental involvement. The review highlights the gap in literature focusing on the health behavior of children and adolescents as well as on parenting. In addition, the review also provides an overview of the continents where fewer studies have examined the presented associations. The findings presented also serve as a guide for program development and implementation to address the increase in non-communicable and other lifestyle-related diseases.

Background

Understanding the health and well-being of children and adolescents has often been overlooked and neglected (Patton et al., 2016). Of late, the importance of understanding child and adolescent health has become apparent and has become a concern for global development (Mokdad et al., 2016). The dearth of empirical evidence in child and adolescent health presents a gap in our understanding (Patton et al., 2016). Attempting to understand adolescent health would allow for the development of strategies to improve health among young people—particularly as it has implications on their health in later life (Mokdad et al., 2016).

Adolescents account for just over sixteen percent of the global population (Nagata, Ferguson, & Ross, 2016), and this developmental phase presents several health-related challenges that add to the high rates of adolescent mortality. Studies examining the high mortality rates during adolescence fail to take into consideration the important role of health behaviors, which pose a threat for positive health and well-being in adulthood (Nagata et al., 2016). The health behaviors that adolescents adopt and engage in, whether positive or negative in nature, may not always have implications on their health now; but later in life (Gore et al., 2011; Nagata et al., 2016). The development of ill-

health as a result of health behaviors adopted and maintained throughout adolescence not only presents individual health concerns in later life, it also adds to the economic burden of government health aid.

Health behavior has been defined as the behaviors and actions that individuals engage in that concerns their physical health, nutritional and dietary practices, physical activity as well as addictive behaviors (Burusic, Sakic, & Koprtla, 2014). Goldsteen, Goldsteen, and Graham (2011) have added to the definition of health behavior as being the behaviors that often promote positive health, yet it has been used contrary too—to refer to behaviors that are detrimental to health as noted during adolescence. These behaviors or their absence has implications on the general health status and well-being of adolescents and is an important determinant of health (Bruhn, 1988; Burusic et al., 2014; Goldsteen et al., 2011). The health behaviors, that young people engage in, are largely shaped by the environment in which they find themselves (Cohen, Scribner, & Farley, 2000; Hanson & Gluckman, 2015). For children and adolescents, the environment often is the parental home environment.

The parental home environment allows for the nurturance and development of children and adolescents. The parent–child relationship and interactions have been noted as having differential outcomes as a result of the quality of the parent–child relationship on the developing child and adolescent. The interactions between the parent–child dyad also have implications on the development, adoption, and maintenance of health behavior. Parenting that involves the displays of warmth and responsiveness has been associated with favorable developmental outcomes for child and adolescent health; however, the lack of parental warmth and autonomy granting has a differing effect on development.

When examining the importance of understanding adolescent health from a global perspective, the United Nation’s Sustainable Developmental Goals (SDG’s) provide an overarching agenda of improving health across the lifespan. However, with the lack of understanding adolescent health and the gaps which exist, the Global Strategy for the first time has included adolescents in its 2015 Global Strategy for Women’s, Children’s and Adolescents’ Health. By understanding adolescent health from the perspective of the SDG’s and the Global Strategy, it creates a platform for closing the gap in our understanding about adolescent health and its determinants. It also allows for determining how to improve morbidity and mortality rates during this developmental phase. Morbidity and mortality are often associated with the health behaviors which are shaped by the environment—the parental home environment. Taking the important role of the parental home environment into consideration and how it shapes health behavior of children and adolescents, the current article therefore aimed to review the associations between health behavior and parenting approaches. The review was framed within a health promotion perspective and broadly examined healthy lifestyle behaviors.

Methods

Terms and definitions

The aim of the systematic review was to establish the relationship between child and adolescent health behavior and parenting approaches. The terms and definitions of health behavior and parenting approaches within the context of the systematic review are explained in [Table 1](#).

Table 1. Terms and definitions.

Term	Definition/explanation
Health behavior(s)	The behaviors or actions that individuals engage in with the aim of promoting and committing to a lifestyle that promotes health and well-being (Leddy, 2003).
Parenting approach	Strategies or ways used by parents in the rearing and caring for their children /offspring (Kitamura et al., 2014).

Search strategy

During the months of November and December 2014, a search was conducted using the following databases and journals: Science Direct, Ebscohost (Academic Search Complete, PsycArticles, Medline, SocIndex and ERIC), BioMed Central, PubMed, Directory of Open Access Journals (DOAJ) and SAGE Journals from 2004 to 2014. A 10-year period was chosen to consider studies that are deemed “recent” in the field. The review consisted of studies that examined the relationship between health behavior and perceived parenting approaches. The terms used in the search included healthy lifestyle behaviors, health-related behavior, health-promoting behavior, healthy behavior, health seeking behavior, parenting, parenting approaches, parenting styles, authoritative parenting, authoritarian parenting, permissive parenting, and uninvolved parenting. The titles and abstracts of the various publications were examined using the inclusion criteria for the review. The retrieval of full text articles was done by one of the reviewers (First Author), and the same process was then followed by the other reviewers (Second and Third Author) to determine whether the articles met the inclusion criteria.

Inclusion criteria

The inclusion criteria that had to be met for inclusion within the review were that the study had to (1) be published in or translated into the English language; (2) published between 2004 and 2014; (3) used either children, adolescents or youth as part of the sample; and (4) examined the relationship or association between health behavior and parenting approaches; and (5) could be either cross-sectional or longitudinal studies.

Methods of the review

The first author conducted an initial search and review of the abstracts and articles, using Boolean logic and Boolean operators. The initial search yielded 1,788 articles for the keywords healthy lifestyle behaviors and parenting. The searches thereafter, when tallied, yielded 96,729 articles for healthy lifestyle behaviors, health-related behavior, health-promoting behavior, healthy behavior, health seeking behavior, parenting, parenting approaches, parenting styles, authoritative parenting, authoritarian parenting, permissive parenting, and uninvolved parenting. During the searches, 96,546 articles were excluded from the review due to their relevance in addressing the aim of the review. In addition to the searches, the titles were also reviewed for eligibility, and a sample of 183 studies was identified. One additional study was obtained from examining the reference lists of the other articles that produced a total of 184

articles. Next, all duplicates were removed reducing the sample to 33 articles. Duplicates were any article that appeared more than once in the list of retrieved articles across the databases searched in the review. The sample of 33 articles was independently read and assessed based on the aim of the review, and 10 articles were finally selected for inclusion in the methodological quality appraisal phase, while the remaining 23 articles were excluded from the review as it did not meet the inclusion criteria as determined at the onset of the review.

Methodological quality appraisal

An instrument was used to assess the methodological quality of the studies that met the inclusion criteria (Table 2). The instrument was adapted from previous systematic reviews by Louw, Morris, and Grimmer-Somers (2007), Wong, Cheung, and Hart (2008), Roman and Frantz (2013) as well as Davids and Roman (2014). The rationale guiding the questions in the methodological quality appraisal are discussed below.

Question 1: Sampling

The first question dealt with the sampling method employed in the study, assessing whether probability or non-probability sampling was employed. Probability sampling allowed for random selection of participants, while non-probability sampling did not involve random selection and often raised the concern about how representative the sample is of the population being studied.

Table 2. Methodological quality appraisal tool.

Q	Item	Scoring
Q1	<i>Sampling method: Was it representative of the population intended in the study?</i>	
	A. Non-probability sampling (including: purposive, quota, convenience and snowball sampling)	0
	B. Probability sampling (including: simple random, systematic, stratified, cluster, two-stage and multi-stage sampling)	1
Q2	<i>Was a response rate mentioned within the study? (Respond no if response rate is below 60%)</i>	
	A. No	0
	B. Yes	1
Q3	<i>Was the measurement tool valid and reliable?</i>	
	A. No	0
	B. Yes	1
Q4	<i>Was the data source primary or secondary?</i>	
	A. Primary data source	1
	B. Secondary data source (survey, not designed for the purpose)	0
Q5	<i>Were Healthy Lifestyle Behaviors examined in the study?</i>	
	A. No	0
	B. Yes	1
Q6	<i>Was the relationship or association between Healthy Lifestyle Behaviors and Parenting Approaches explored?</i>	
	A. No	0
	B. Yes	1
Scoring: Total score divided by total number of items multiplied by 100 (expressed as a percentage)		
Methodological appraisal score		
Bad	Satisfactory	Good
0–33 %	34–66 %	67–100 %

Therefore, studies that employed a probability sampling method scored one point on the first question, while the opposite received a scoring of zero.

Question 2: Study response rate

The second question examined whether the response rate was mentioned for the study, as the higher the response rate that a study has the lower the risk of non-response bias in the results found. Therefore, if the response rate was mentioned in the study, and it was 60% or above, it received a score of one, where if there was no response rate mentioned or it was below 60%, it received a zero due to possible non-response bias.

Question 3: Instrument reliability & validity

The third question examined the way the instrument was used. It looked at the reliability and validity of the instrument. When examining reliability, if the study examined the (1) internal consistency reliability of the items in the instrument or (2) if it employed a test-retest method to assess consistency of the instrument it scored a 1, if it did not report assessing the reliability of the instrument in the study presented it scored a zero.

Question 4: Origin of data source

The fourth question was about the data source used to present the findings. Primary data are data that the researcher had collected him/herself (such as questionnaires developed for the specific intention of a research project), while secondary data sources are those that already exist (such as official government statistics). If it was a primary data source, it scored one point because the information/data had been collected for the intended purpose of the study, while the secondary data source received a zero.

Questions 5 and 6: Associations between healthy lifestyle behaviors and parenting approaches

The fifth question aimed to establish whether the study examined healthy lifestyle behaviors, if it did it received one point, if not a zero was allocated. The sixth question aimed to determine whether the study examined the association between healthy lifestyle behaviors and parenting approaches. If the association was examined in the study, it received one point, and failing to examine the association resulted in a zero.

After the methodological appraisal, the final sample consisted of ten articles which were included in the systematic review (Table 3) as they all met the criteria for inclusion. Figure 1 outlines the process involved in the systematic review.

Data extraction and synthesis

After the methodological quality was appraised for each of the studies, only those studies that met the criteria for the categories of satisfactory to good were reviewed. In an attempt to make sense of the data generated from the review, a narrative synthesis approach was employed. This approach to the synthesis of the findings was selected as it allowed for synthesizing of the data narratively—as the study designs were heterogeneous in nature (Guise, Anderson, & Wiig, 2014). In addition, the use of meta-ethnographic or meta-analytic analyses did not prove to be viable alternatives in attempts to understanding the findings within the review (Guise et al., 2014).

The narrative synthesis approach employed was adapted from the recommendations by Popay and colleagues (2006) and has previously been implemented by Leamy, Bird, Le

Boutillier, Williams, and Slade (2011), which followed a three staged synthesis approach: (1) developing a preliminary synthesis of findings of included studies, (2) exploring the relationships which exist in the data, and (3) an assessment of the robustness of the synthesis.

The first stage of developing a preliminary synthesis of the findings of the studies included in the review followed a data extraction procedure as used by Davids and Roman (2014). The data extraction procedure involved tabulating data from the studies that met the methodological quality criteria for inclusion. The information in the data extraction table included author, geographical location of study, study design, participant information, instruments used, healthy lifestyle behavior, and the relationship/association between healthy lifestyle behavior and parenting approaches (Table 4). In the second stage of the narrative synthesis, the relationships which exist within the data were explored by tabulating the associations between health behavior and parenting approaches (Tables 5 and 6). The third and final stage of the narrative synthesis involved assessing the robustness of the synthesis, this allowed for an examination of the methodological rigor and checking of data at each stage of the data collection and analysis procedures (Le Boutillier et al., 2015). To ensure robustness within the review, all articles were initially searched and assessed by the first author, and a follow-up double-search and assessment were employed by the second and third authors. The retrieved articles also involved a screening for eligibility and an assessment of the methodological quality of the articles to determine the methodological rigor of the studies to be included in the review (as discussed above).

Table 3. Methodological appraisal.

Author(s)	Q1	Q2	Q3	Q4	Q5	Q6	%	Decision
Browne and Jenkins (2012)	0	1	1	0	1	1	66.67	Included
Coccia et al. (2012)	0	1	1	1	1	1	83.33	Included
Kwon and Wickrama (2014)	0	1	1	0	1	1	66.67	Included
Lohaus, Vierhaus, and Ball (2009)	0	1	1	1	1	1	83.33	Included
Nicholls et al. (2014)	1	0	1	0	1	1	66.67	Included
Philips et al. (2014)	1	1	1	1	1	1	100	Included
Ray and Roos (2012)	1	1	1	0	1	1	83.33	Included
Ray et al. (2013)	1	1	1	0	1	1	83.33	Included
Rew et al. (2013)	0	1	1	1	1	1	83.33	Included
Wong (2006)	1	1	1	1	1	1	100	Included

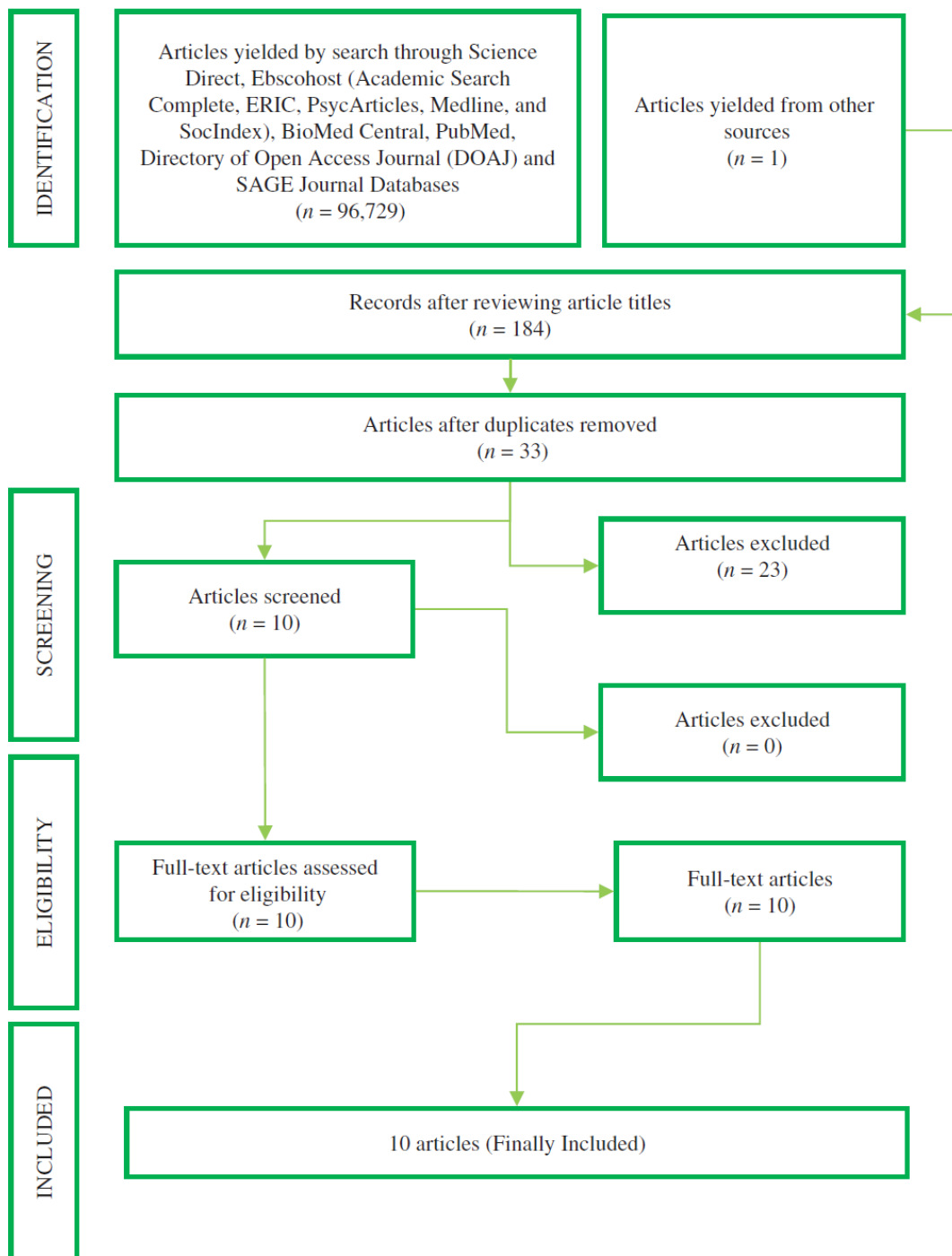


Figure 1. Diagrammatical representation of systematic review process.

Results

The studies that were considered for inclusion in the methodological quality appraisal phase of the systematic review can be found in Table 3. Of the thirty-three studies that were initially retrieved, ten studies met the criteria for methodological appraisal.

Table 4. Data extraction table.

Author	Geographical location	Study design	Participants	Instruments used	Parenting approach(es)	Health behavior(s)	Associations/relationships between parenting approach(es) and health behavior(s)
Kwon and Wickrama (2014)	Rural Iowa	Longitudinal	407 parents and their adolescents (Mean age at baseline study: mothers = 37, fathers = 39, and adolescents = 13 years old)	Parenting: Autonomy supportive parenting (17 items used to assess). Monitoring (assessed using 7 items). Parental warmth (assessed using 10 items). Healthy lifestyle behavior: Health promoting behavior (2 items assessed health behavior). Health risk behavior (5 items used assessing alcohol and nicotine use in past year).	Autonomy supportive parenting, parental monitoring and warmth	Health promoting behavior (eating behaviors and physical activity, converted to overall health behavior), health risk behavior	<ul style="list-style-type: none"> Maternal autonomy supportive parenting had no direct association for health risk behaviors for male adolescents; however it was negatively associated for female adolescents. Paternal autonomy supportive parenting was found to promote female adolescent health promoting behavior, but no association was found for male adolescents. Medium to high levels of parental encouragement was significantly associated with higher global health related quality of life behaviors. High levels of parental encouragement were associated with behaviors that promote higher psychosocial functioning and well-being. Medium to high levels of parental encouragement was significantly associated with behaviors related to better physical functioning and well-being.
Nicholls et al. (2014)	Barwon-South West region of Victoria, Australia	Cross-sectional	3040 adolescents (56.12% males, 43.88% females, mean age = 14.62 years)	Parenting: Adolescent behaviors, attitudes & knowledge questionnaire (ABKQ) (4 items) Healthy lifestyle behavior: • Pediatric quality of life inventory	Parental encouragement	Global health behavior, with regards to emotional, social and school functioning and well-being as well as physical activity	<ul style="list-style-type: none"> Medium to high levels of parental encouragement was significantly associated with higher global health related quality of life behaviors. High levels of parental encouragement were associated with behaviors that promote higher psychosocial functioning and well-being. Medium to high levels of parental encouragement was significantly associated with behaviors related to better physical functioning and well-being.
Philips et al. (2014)	Belgium	Cross-sectional	288 parents (mainly mothers) and their children (145 males; 143 females)	Parenting: • Comprehensive general parenting questionnaire Healthy lifestyle behavior: • Children's eating habits questionnaire (CEHQ)-food frequency questionnaire • Dutch eating behavior questionnaire • Items asking parents about physical activity and bedtime	Nurturance, structure, behavior control, and coercive control, and overprotection	Frequencies of food consumption, physical activity and sleep, emotional eating, external eating, restricted eating	<ul style="list-style-type: none"> Parental behavior control positively associated with consumption of light soft drinks Parental coercive control and nurturance was significantly positively associated with sedentary behavior Parental coercive control was significantly negatively associated with sleep duration

(Continued)

Table 4. (Continued).

Author	Geographical location	Study design	Participants	Instruments used	Parenting approach(es)	Health behavior(s)	Associations/relationships between parenting approach(es) and health behavior(s)
Ray et al. (2013)	Helsinki, Finland	Cross-sectional	805 matched parent-child dyads	Parenting: <ul style="list-style-type: none"> • 3 statements assessing parenting practices • 4 statements were used to assess parental warmth /responsiveness Healthy lifestyle behavior: <ul style="list-style-type: none"> • Questions taken from health behaviors of school-aged children study (HBSC) 	Parenting practices, parental warmth and responsiveness	Health related behavior assessed using frequency of screen time, sleep duration, leisure physical activity, and frequency of food intake	<ul style="list-style-type: none"> • More frequent parenting practices as well as more parental warmth and responsiveness was associated with more favourable health related behavior (longer sleep duration, more healthy food intake, regular meal frequency)
Rew et al. (2013)	Central Texas	Longitudinal	1081 adolescents in their junior and senior years of high school	Parenting: <ul style="list-style-type: none"> • Authoritative Parenting Index • Parental monitoring assessed using 8 items as used in a study by Huebner and Howell (2003) Healthy lifestyle behavior: <ul style="list-style-type: none"> • Self-care inventory • Adolescent lifestyle questionnaire 	Parental responsiveness, demandingness and monitoring	Nutrition, physical activity, safety, health practices awareness and stress management	<ul style="list-style-type: none"> • Parental monitoring was a significant predictor of health behaviors around nutrition, physical activity, safety, health practice awareness and stress management • Parental responsiveness was found to be a significant predictor of behaviors for safety and nutrition • However, parental responsiveness was also positively associated with safety, however it was negatively associated with physical activity and nutrition • Parental health promoting behaviors were also a significant predictor for adolescent health-related behavior of nutrition, physical activity and health practices awareness
Browne and Jenkins (2012)	Cities of Toronto and Hamilton, Ontario, Canada	Longitudinal	501 Canadian families (females /mothers and their children)	Parenting: <ul style="list-style-type: none"> • Parenting items adapted from a study by Strayhorn and Weidman's (1988) Parent Practices Scale Healthy lifestyle behavior: <ul style="list-style-type: none"> • 1 item assessing overall child healthy lifestyle behavior 	Positive and negative differential parenting	Overall healthy lifestyle behaviors	<ul style="list-style-type: none"> • Differential negative parenting was associated with more prevalent engagement in poorer health behaviors • For every one standard deviation in differential negative parenting at time 1, there was engagement in poor health behaviors that were 49% higher

Coccia et al. (2012)	United States	Cross-sectional	169 students (52.6% males, 47.7% females) with a mean age of 15.8 years old	Parenting: <ul style="list-style-type: none"> • 31 item instrument measuring parental indulgence as used in a study by Clarke, Dawson, and Bredehoft (2004) • 1 item assessing perceived health-related to behavior 	Parental indulgence: (i) too much, (ii) over-nurturing and (iii) soft structure	Overall health-related behavior	<ul style="list-style-type: none"> • Perceived parental indulgence (having parents give too much, being over-nurturing and provide soft structure) was related to higher perceptions of health behavior engagement
Ray and Roos (2012)	Helsinki, Finland	Longitudinal	Participants (344 girls; 322 boys) were in grades 5–6	Parenting: <ul style="list-style-type: none"> • Approaches to parenting was assessed with the frequency of family meals times during the week, parenting being physically involved with a child and spending time with a child, as well as frequency of the child being alone at home 	Parenting practices /parental involvement	Healthy lifestyle behaviors around sleep duration, screen time, leisure time physical activity and food intake	<ul style="list-style-type: none"> • The prevalence of parenting practices at meal times predicted less screen time, longer sleeping durations, increased fruit and vegetable intake and less soft-drink and chocolate intake (more healthy lifestyle behaviors) • Having family mealtimes, being physically active with children and being home alone after school (parental involvement) predicted several health behaviours
Lohaus, Vierhaus, and Ball (2009)	Germany	Longitudinal	2 groups in the study: (1) 202 females and 230 males followed from grades 3–5 with a mean age of 7.9 years in first year of study, (2) 202 females and 164 males followed from grades 5–7 with a mean age of 10.1 at the first year of the study	Parenting: <ul style="list-style-type: none"> • 27 item instrument assessing parenting as used in a study by Reitzle, Winkler-Metzke, and Steinhausen (2001) 	Parenting styles	Positive and negative health-related behavior	<ul style="list-style-type: none"> • Authoritative parenting style (maternal and paternal) was found to be associated with higher levels of positive health-related behavior for both groups, however the opposite was found for maternal and paternal authoritarian and neglectful parenting
Wong (2006)	Northern California, San Francisco	Cross-sectional	93 African-American and 103 Latino parents and their children. Mean age for African-American children was 2.5 years and Latino children was 2.8 years of age	Parenting: <ul style="list-style-type: none"> • Parent Behavior Checklist—Short form • 10 item version of the Functional Status IIR 	Parental discipline and nurturing	Overall functional health status made up of physical, mental and psychological health	<ul style="list-style-type: none"> • Higher overall functional health status related to behavior was significantly associated to more parental nurturing • Lower functional health status in relation to behavior was associated with more physical discipline displayed in parenting

Table 5. Examining health behaviors, and associations with parenting approaches.

Healthy lifestyle behaviors	Health behavior(s)	Author(s)	Association with parenting approach	
<i>Healthy lifestyle behaviors:</i> These are behaviors that promote positive health and well-being	General/overall health	Kwon and Wickrama (2014)	• Paternal autonomy supportive parenting positively associated with female health promoting behavior, no association for males. (+PA)	
		Nicholls et al. (2014)	• Medium to high levels of parental encouragement positively associated (+PA)	
		Ray et al. (2013)	• Frequent parenting practices positively associated (+PA) • Parental warmth and responsiveness positively associated (+PA)	
		Rew et al. (2013)	• Parental monitoring was a significant predictor (+PA) • Parental health promoting behaviors was a predictor of health-related behaviors of (+PA)	
		Browne and Jenkins (2012)	• Differential negative parenting negatively associated (-PA)	
		Coccia et al. (2012)	• Perceived parental indulgence was positively associated (-PA)	
		Lohaus, Vierhaus, and Ball (2009)	• Paternal and maternal authoritative parenting was positively associated (+PA) • Paternal and maternal authoritarian and neglectful parenting was negatively associated (-PA)	
		Wong (2006)	• Parental nurturing positively associated with higher overall functional health status (+PA) • Physical discipline displayed by parent negatively associated with overall functional health status (-PA)	
		Nutrition	Philips et al. (2014)	• Parental behavior control positively associated (-PA)
			Rew et al. (2013)	• Parental responsiveness negatively associated and was a predictor for (+PA)
			Ray and Roos (2012)	• Parenting practices (involvement) was positively associated (+PA)
		Physical functioning /physical activity	Nicholls et al. (2014)	• Medium to high levels of parental encouragement positively associated (+PA)
			Rew et al. (2013)	• Parental responsiveness negatively associated (+PA)
		Sleep duration /quality	Philips et al. (2014)	• Parental coercive control negatively associated (-PA)
Ray and Roos (2012)	• Parenting practices (involvement) was positively associated (+PA)			
Psychosocial functioning Screen-time	Nicholls et al. (2014)	• Higher levels of parental encouragement positively associated (+PA)		
	Ray and Roos (2012)	• Parenting practices (involvement) was positively associated (+PA)		
Safety	Rew et al. (2013)	• Parental responsiveness positively associated as well as a predictor of (+PA)		

Note: +PA = Positive Parenting Approach; -PA = Negative Parenting Approach.

The criteria that had to be satisfied as part of the methodological quality appraisal phase included sampling methods, measurement tools, data sources used, whether healthy lifestyle behaviors were considered, and whether the relationship between healthy lifestyle behaviors and parenting approaches were examined. Of the ten studies that formed part of the methodological quality appraisal, all scored good (67–100%) for the methodological appraisal score. The sample for the review was made up of ten studies that met the criteria for inclusion during the methodological quality appraisal.

Table 6. Positive and negative parenting approaches examined in the review.

Parenting approach	Author(s)	Parenting approach definition
<i>Positive parenting approach</i>		
Positive parenting approaches are often synonymous with socially acceptable developmental outcomes for children and adolescents (Davids & Roman, 2014), and there is often a display of nurturance, support, and monitoring within the parent-child relationship (Lee, Daniels, & Kissinger, 2006).	Kwon and Wickrama (2014)	<ul style="list-style-type: none"> Autonomy supportive parenting: Parenting that consists of support, encouragement and acceptance during the childhood and adolescence (Kwon & Wickrama, 2014; Ryan, Jorm, & Lubman, 2010).
	Nicholls et al. (2014)	<ul style="list-style-type: none"> Parental monitoring and warmth: Characteristics of monitoring and warmth in parenting, are key dimensions of authoritative parenting that has been associated with pro-social outcomes among Western societies (Davids et al., 2015). Parental encouragement: Parenting where there is a display of medium to high levels of positive reinforcement and encouragement to engage in activities that promote pro-social development (Nicholls et al., 2014).
	Philips et al. (2014), Wong (2006)	<ul style="list-style-type: none"> Parental nurturance: Parenting where there is the promotion and support of individuality and self-assertion through the display of support and responsiveness (Philips et al., 2014). Parental structure: Parenting where there is the display of organization in the child's environment by means of help and enforcing rules aimed at achieving goals and setting boundaries (Philips et al., 2014).
	Ray et al. (2013)	<ul style="list-style-type: none"> [Positive] parenting practices: These are the strategies that parents employ, usually behavioral, in the socialization and rearing of their children with the aim of promoting pro-social development (Ray et al., 2013). Parental warmth and responsiveness: One of two dimensions that constitutes parenting styles. High levels of parental warmth and responsiveness is common among authoritative parenting (Ray et al., 2013).
	Rew et al. (2013)	<ul style="list-style-type: none"> Parental warmth and responsiveness: As previously defined by Ray et al. (2013), parental warmth and monitoring is one of the dimensions that forms part of parenting styles, and high levels of warmth and responsiveness has been associated with positive developmental outcomes for children as it is commonly associated with authoritative parenting (Rew et al., 2013).
	Browne and Jenkins (2012)	<ul style="list-style-type: none"> Positive differential parenting: The level of positivity experienced by the child within the parent-child relationship which has been associated with psychosocial and behavioral development (Browne & Jenkins, 2012).
	Ray and Roos (2012)	<ul style="list-style-type: none"> Parenting practices [parental involvement]: These practices refer to the behavioral strategies that parents employ where there is the display of involvement and parental warmth in the socialization and rearing of their children with the aim of promoting pro-social development (Ray et al., 2013).
	Lohaus, Vierhaus, and Ball (2009)	<ul style="list-style-type: none"> Authoritative parenting style: Parenting where there is the display of high levels of both parental responsiveness and demandingness (Lohaus, Vierhaus & Ball, 2009).
<i>Negative parenting approach</i>		
Negative parenting approaches are synonymous with developmental outcomes which hinder positive, psychosocial development as a result of the parent-child relationship within children and adolescents (Betts, Trueman, Chiverton, Stanbridge, & Stephens, 2013). It also involves parenting that occurs in the presence of inadequate parental monitoring and supervision, as well as a display of parental inconsistency and /or harsh forms of discipline (Barry, Frick, & Grafeman, 2008).	Philips et al. (2014)	<ul style="list-style-type: none"> Parental behavior control: The display of parental supervision in the child's daily activities (Philips et al., 2014). Coercive control: Parenting where there is the display of behaviors or actions that are intrusive and dominating where individuality and autonomy is discouraged (Philips et al., 2014). Parental over-protection: Excessive nurturing and strict control is common with the parent-child relationship (Philips et al., 2014).
	Rew et al. (2013)	<ul style="list-style-type: none"> Parental demandingness: Parenting that is commonly associated with high levels of control.
	Browne and Jenkins (2012)	<ul style="list-style-type: none"> Negative differential parenting: The level of negativity experienced by the child within the parent-child relationship which has been associated with negative outcomes on the psychosocial and emotional development of children (Browne & Jenkins, 2012).
	Coccia et al. (2012)	<ul style="list-style-type: none"> Parental indulgence: Parenting where there is the display of over indulgence which has implications on the development of self-efficacy in the child (Coccia et al., 2012).

(Continued)

Table 6. (Continued).

Parenting approach	Author(s)	Parenting approach definition
	Lohaus, Vierhaus, and Ball (2009)	<ul style="list-style-type: none"> • Authoritarian parenting: Parenting where there is a display of high levels of demandingness and low levels of responsiveness, which has been associated with diminished outcomes for children (Lohaus, Vierhaus & Ball, 2009). • Neglectful parenting: Parenting that is commonly associated with low displays of demandingness and responsiveness in the parent-child relationship (Lohaus, Vierhaus & Ball, 2009).
	Wong (2006)	<ul style="list-style-type: none"> • Physical parent discipline: Parenting where there is the display of physical forms of parenting.

Overview of the reviewed studies

The systematic review sample consisted of 10 studies, of which five were cross-sectional (Coccia, Darling, Rehm, Cui, & Sathe, 2012; Nicholls et al., 2014; Philips, Sioen, Michels, Sleddens, & De Henauw, 2014; Ray, Kalland, Lehto, & Roos, 2013; Wong, 2006) and five longitudinal (Browne & Jenkins, 2012; Kwon & Wickrama, 2014; Lohaus, Vierhaus & Ball, 2009; Ray & Roos, 2012; Rew, Arheart, Thompson, & Johnson, 2013). From a geographical perspective, five studies were conducted in North America (Browne & Jenkins, 2012; Coccia et al., 2012; Kwon & Wickrama, 2014; Rew et al., 2013; Wong, 2006), four in Europe (Lohaus, Vierhaus, & Ball, 2009; Philips et al., 2014; Ray et al., 2013; Ray & Roos, 2012), and one in Australia (Nicholls et al., 2014). No studies included in the review were from Africa, Asia, and South America. The studies reported the ages of the children and adolescents to be within the range from 3 to 16 years of age. Some of the studies also reported data collected from parent-child dyads.

Health behavior

Health behaviors have been defined as the behaviors that individuals engage in that form part of one's daily routines; these include diet, physical activity, sedentary behaviors, and sleep (Ray & Roos, 2012). However, often when examining health behavior, physical activity and nutritional behaviors are often thought of. When considering the World Health Organization's definition of health, this too speaks of a holistic understanding of health that extends beyond merely engaging in physical activity and nutritional dietary behaviors. In the review, a number of health behaviors that promote health and well-being were examined (Table 5). These health behaviors included: overall or general health behavior (Browne & Jenkins, 2012; Coccia et al., 2012; Kwon & Wickrama, 2014; Lohaus, Vierhaus, & Ball, 2009; Nicholls et al., 2014; Ray et al., 2013; Rew et al., 2013; Wong, 2006), nutritional behavior (Philips et al., 2014; Ray & Roos, 2012; Rew et al., 2013), physical activity and functioning (Nicholls et al., 2014; Rew et al., 2013), sleep duration (Philips et al., 2014; Ray & Roos, 2012), psychosocial functioning and well-being (Nicholls et al., 2014), screen-time behaviors (Ray & Roos, 2012), and safety (Rew et al., 2013). Of these health-related behaviors, the most prevalent was overall or general health behavior. The health-related behavior of overall or general health behavior was made up of a number of health-related behaviors within the various studies. These health behaviors included nutritional dietary behaviors, physical activity, frequency of health-risk behaviors, emotional and social functioning, overall physical, mental and psychological health, and overall healthy lifestyle-related behaviors (Browne & Jenkins, 2012; Coccia et al., 2012; Kwon & Wickrama, 2014; Lohaus, Vierhaus, & Ball, 2009; Nicholls et al., 2014; Ray et al.,

2013; Rew et al., 2013; Wong, 2006). The health behaviors with the least prevalence in the review included: psychosocial functioning and well-being (Nicholls et al., 2014), screen-time behaviors (Ray & Roos, 2012) and safety (Rew et al., 2013).

Parenting approaches

The myriad of parenting approaches examined within the various studies in the review highlights the complexity of parenting (Table 4). The parenting approaches identified within the various studies were categorized into being either positive or negative parenting approaches based on the definition of the approaches used within the studies examined (Table 6), and this is similar to a review conducted by Davids, Roman, and Leach (2015) that categorized parenting approaches into positive and negative forms of parenting. Nineteen parenting approaches were identified in the 10 studies reviewed; the positive parenting approach was the most prevalent parenting approach in the reviewed studies (Browne & Jenkins, 2012; Kwon & Wickrama, 2014; Lohaus, Vierhaus, & Ball, 2009; Nicholls et al., 2014; Philips et al., 2014; Ray et al., 2013; Ray & Roos, 2012; Rew et al., 2013; Wong, 2006), and negative parenting was the least prevalent (Browne & Jenkins, 2012; Coccia et al., 2012; Lohaus, Vierhaus, & Ball, 2009; Philips et al., 2014; Rew et al., 2013; Wong, 2006). The studies by Philips et al. (2014), Rew et al. (2013), Browne and Jenkins (2012), Lohaus, Vierhaus and Ball (2009) and Wong (2006) included both positive and negative parenting approaches.

Based on the parenting approaches presented in Table 4 and considering the definitions of the approaches, ten parenting approaches were categorized as positive parenting approaches, namely: (1) autonomy supportive parenting (Kwon & Wickrama, 2014), (2) parental monitoring and warmth (Kwon & Wickrama, 2014), (3) parental encouragement (Nicholls et al., 2014), (4) parental nurturance (Philips et al., 2014; Wong, 2006), (5) parental structure (Philips et al., 2014), (6) positive parenting practices (Ray et al., 2013), (7) parental warmth and responsiveness (Ray et al., 2013; Rew et al., 2013), (8) positive differential parenting (Browne & Jenkins, 2012), (9) parental involvement (Ray & Roos, 2012), and (10) authoritative parenting (Lohaus, Vierhaus, & Ball, 2009). Nine approaches presented in the review were categorized as being negative parenting approaches, namely: (1) parental behavior control (Philips et al., 2014), (2) coercive control (Philips et al., 2014), (3) parental over-protection (Philips et al., 2014), (4) parental demandingness (Rew et al., 2013), (5) negative differential parenting (Browne & Jenkins, 2012), (6) parental indulgence (Coccia et al., 2012), (7) authoritarian parenting (Lohaus, Vierhaus, & Ball, 2009), (8) neglectful parenting (Lohaus, Vierhaus, & Ball, 2009), and physical parent discipline (Wong, 2006).

Associations between health behavior and parenting approaches

The data extracted from the included studies in the review found specific parental approaches to be associated with behaviors that promote positive health and development (Tables 4 and 5). Parental autonomy supportive parenting (Kwon & Wickrama, 2014), parental encouragement (Nicholls et al., 2014), parental behaviour control (Philips et al., 2014), warmth and responsiveness (Ray et al., 2013; Rew et al., 2013), parental monitoring (Rew et al., 2013), parental health promoting behaviours (Rew et al., 2013), authoritative parenting (Lohaus, Vierhaus, & Ball, 2009), and parental

nurturance (Wong, 2006) were all associated with health behaviors that promote health (Table 5). The behaviors that were associated with these parenting approaches included behaviors that promote overall health status, nutritional and dietary behaviors, physical activity and functioning, sleep behaviors related to duration and quality, psychosocial functioning, screen-time behaviors, and safety (Browne & Jenkins, 2012; Coccia et al., 2012; Kwon & Wickrama, 2014; Lohaus, Vierhaus, & Ball, 2009; Nicholls et al., 2014; Philips et al., 2014; Ray et al., 2013; Ray & Roos, 2012; Rew et al., 2013; Wong, 2006).

The parenting approaches that were associated with health behaviors which promoted health less were coercive control and over-protection (Philips et al., 2014), parental demandingness (Rew et al., 2013) and physical discipline (Wong, 2006), negative differential parenting (Browne & Jenkins, 2012), indulgent (Coccia et al., 2012), neglectful, and authoritarian parenting (Lohaus, Vierhaus, & Ball, 2009) (Tables 4 and 5).

The associations between parenting approaches and health behavior found (1) gender differences in males and females, where more significant associations were found for females than for males (Kwon & Wickrama, 2014), (2) parents who engaged in health behaviors that promote health was a significant predictor for adolescent health behavior and their health responsibility (Rew et al., 2013) (Table 4).

The results presented in Table 4 suggests that the construct of health behaviors is very heterogeneous and is associated with parenting approaches which are both positive and negative in nature. Even though health behavior is presented homogeneously in the associations with parenting approaches, an understanding of the overarching concept of health behaviors is presented in Table 5 highlighting that health behavior is heterogeneous in the review. These included behaviors that promote the overall health status of children and adolescents as well as behaviors around safety that influences health (Table 5).

Discussion

The developmental phase of adolescence often is associated with engaging in behaviors that could either promote positive health or hinder it. The behaviors that are established during this developmental phase have been associated with outcomes in later life. However, central to the establishment of health-related behaviors has been the influential role of the parent–child relationship. The current review aimed to establish the associations between health behavior of children and adolescents and parenting approaches.

Health behavior

Health-related behaviors are influenced by a number of factors which could be behavioral, psychosocial, or sociocultural in nature (Terre, 2007). Often when considering the behaviors related to the health status of individual's, behaviors related to nutrition and physical activity are thought of. However, when considering the factors related to health behavior, as suggested by Terre (2007), considering dietary behaviors and physical activity in isolation to the promotion of positive health and well-being would be limiting. Lifestyle-related behavior that promotes positive health should consider behaviors related to both

psychosocial and sociocultural dimensions of an individual's life to aid in the promotion of positive health and the prevention of ill-health (Sleet, Gielen, Diekman, & Ikeda, 2010). This too is presented in the World Health Organization (WHO, 2006)'s definition of health as being "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." The current review therefore considered health behavior that included the physical, mental and social health and well-being of children and adolescents. The most prevalent health behavior presented in the review was behaviors that were in the category of overall and/or general health behavior. These behaviors ranged from physical, mental and psychological health behaviors which were representative of the health behaviors as considered in the WHO (2006)'s definition of health. Health behaviors have been presented within literature to be associated with a number of positive developmental outcomes on health and well-being, these include: decreased prevalence and incidence of diseases such as cardiovascular disease and cancer (Grunbaum, Lowry, & Kann, 2001) and a decline in death rates related to ill-health (Wang, Ou, Chen, & Duan, 2009) as well as immediate and long term positive health and well-being outcomes (Pender, Murdaugh, & Parsons, 2010), self-efficacy (Smith, 2011; Smith & Holloman, 2013), increased sense of psychological safety (Harris, 1998), heightened self-esteem and healthier self-concept (Taylor & Turner, 2001), decreased risk of obesity and being overweight (Garaulet et al., 2011), and increase energy levels (Gaina et al., 2007). On the contrary, literature suggests that health-risk behaviors are often associated with engagement in substance abuse, sexual risk taking behavior, adoption of poor diet and physical inactivity, diminished mental health and engagement in violence which hinders the development of children and adolescents (Johnson & Taliaferro, 2012; Wang et al., 2009). Interestingly, the health behaviors that children and adolescents engage in are often as a result of the contributory role that the environment plays (Johnson & Taliaferro, 2012). The environment that children and adolescents are often exposed to is their familial home environment in which parenting takes place.

The role of parenting

Parenting as a central element of the familial home environment is often thought of as being a process. Parenting as a process is largely concerned with the direct and indirect interactions between child and parent and how it plays a role in the pro-social development of children and adolescents (Brooks, 2011). The impact that parenting has on the parent-child relationship has been of interest, particularly with regard to the development of the child and adolescent. The process of parenting could be seen as one that promotes pro-social behaviors, development and well-being (positive parenting approaches) (Davids et al., 2015; Kaiser, McBurnett, & Piffner, 2011) or it could hinder the prosocial development and create a diminished sense of well-being (negative parenting approaches) (Dallaire et al., 2006). The role that these parenting approaches exert on the development of children and adolescents can be seen as having a ripple effect on development throughout the lifespan of individuals, as can be found in literature. In the review, the parenting approaches were categorized into positive and negative parenting approaches. The most prevalent parenting approach presented within the review was the positive parenting approach.

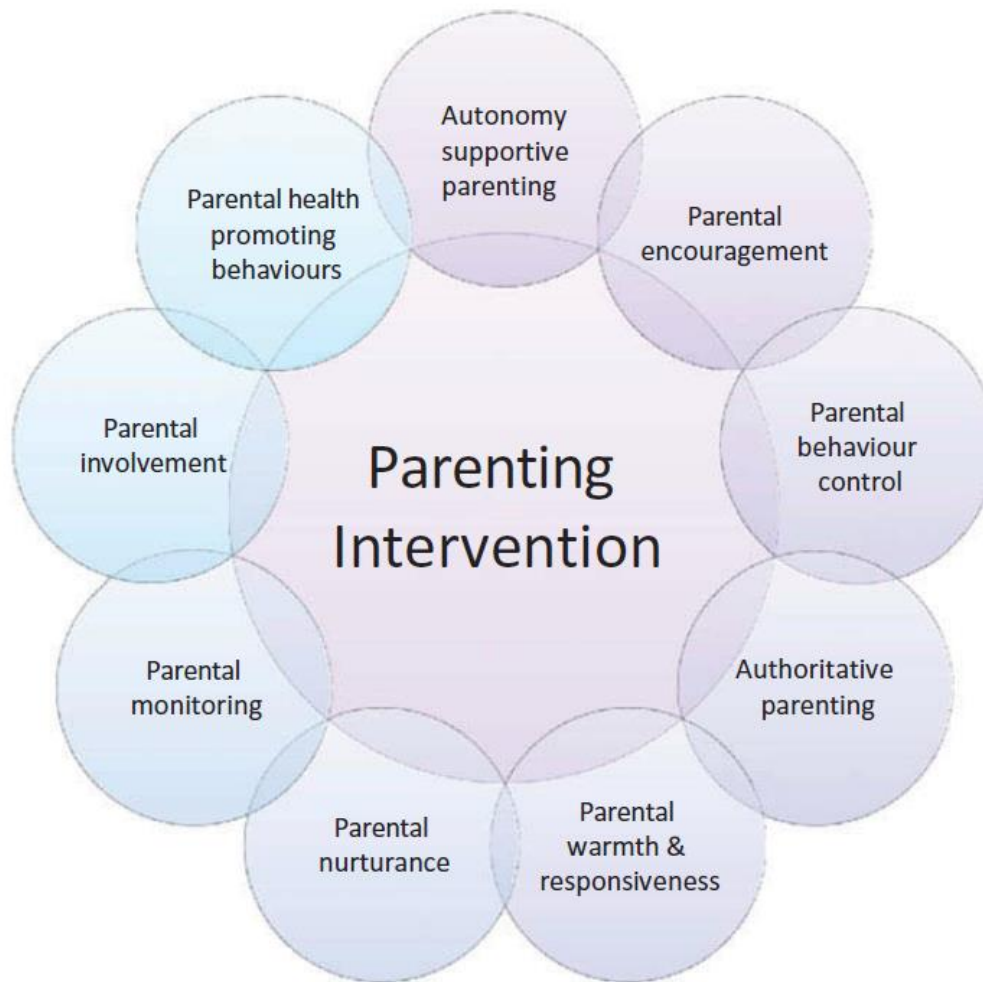


Figure 2. Parenting approaches to inform parenting interventions to improve child and adolescent health.

The positive parenting approach has been associated with a number of positive developmental outcomes and socially appropriate behaviors for children and adolescents (Danzig, Dyson, Olino, Laptook, & Klein, 2015). Developmentally children who were raised by parents who display positive parenting approaches were found to be well-adjusted (Danzig et al., 2015), display diminished behavioral problems (Aunola & Nurmi, 2005) and are socially competent (Baumrind, 1991), while negative parenting approaches have been associated with developmental outcomes that have implications on the development of the child and adolescent.

The link: Health behavior and parenting approaches

For centuries, parenting approaches have been associated with a number of developmental outcomes for children and adolescents alike (Davids & Roman, 2014; Davids et al., 2015). Parenting approaches that allow for autonomy and display warmth have been associated with a number of positive developmental outcomes (Aunola & Nurmi, 2005). The results presented in the review suggest that autonomy supportive parenting, parental encouragement, behavior control, authoritative parenting, parental warmth and responsiveness, parental nurturance and monitoring, and parental involvement are the parenting approaches that have been associated with health behaviors that promote positive health in children and adolescents. The results suggest that when parents make use of these approaches, their children and adolescents are more likely to be associated with an increase in healthy lifestyle behavior. These associations of between parenting approaches

and health behavior as presented in the review adds to our understanding of health—particularly among children and adolescents. Understanding health of adolescents has been ignored within studies for a long time and has generated gaps in our understanding of the health of young people (Patton et al., 2016). The associations between parenting approaches and health behavior, as examined within the review, also afford the opportunity to make use of evidence-based decision-making in interventions that are aimed at promoting positive health and development of children and adolescents. Interventions focused on parenting to promote health behavior should take into consideration the parenting approaches associated with positive health behavior (See Figure 2). The parental home environment plays an important role in the development and maintenance of health-related behaviors. By informing parenting interventions aimed at promoting child and adolescent health behavior, the parenting approaches as defined in Figure 2 could be incorporated into interventions as supported by evidence-based practice.

The findings presented contribute to current public health concerns about non-communicable and other lifestyle-related diseases (Proimos & Klein, 2012; Tagoe & Dake, 2011). Non-communicable diseases are often associated with lifestyle-related behaviors that diminish positive health and well-being and has posed an international concern with the ever increasing numbers (Hanson & Gluckman, 2015). Kwon and Wickrama (2014) have alluded to the important role that the familial home environment, where parenting often takes place, plays in either the promotion or hindering of healthy lifestyle behaviors. The results presented in the review confirm the important role of parenting in health behaviors (Kwon & Wickrama, 2014) as parenting approaches (highlighted in Figure 2) have been associated with health behaviors in children and adolescents. The current review suggests that the important role that parenting plays in the adoption and maintenance of health behaviors could promote positive health and might lessen the burden of non-communicable diseases as a public health concern highlighted by the United Nations.

Implications for practice

The findings presented in the review highlights the role that parenting approaches play in the associations with health behavior of children and adolescents. Globally, non-communicable disease poses as a public health concern and innovative strategies are needed to tackle this concern. Public health practitioners and policy makers could use the findings of the current review to develop and implement parenting programs that promote the parenting approaches as determined within the review (namely, autonomy supportive parenting (Kwon & Wickrama, 2014), parental monitoring and warmth (Kwon & Wickrama, 2014), parental encouragement (Nicholls et al., 2014), parental nurturance (Philips et al., 2014; Wong, 2006), parental structure (Philips et al., 2014), positive parenting practices (Ray et al., 2013), parental warmth and responsiveness (Ray et al., 2013; Rew et al., 2013), positive differential parenting (Browne & Jenkins, 2012), parental involvement (Ray & Roos, 2012), and authoritative parenting (Lohaus, Vierhaus, & Ball, 2009); see Figure 2) to assist in the promotion of health behaviors which could assist in lessening the current burden of mortality and morbidity as a result of the steep incline in non-communicable and other lifestyle-related diseases.

Limitations and recommendations

One of the limitations of the current review was the lack of focus on socioeconomic status when examining the associations between health behavior of children and adolescents and parenting approaches. Socioeconomic inequalities play an important role in the health status and behaviors of societies (Rathmann et al., 2015) therefore to examine the effect of socioeconomic status in the associations between health behavior and parenting approaches would yield even greater outcomes for program development and implementation to address some of the emerging public health concerns, such as non-communicable diseases. Socioeconomic status has been documented as playing a pivotal role in the associations with child and adolescent health (Hanson & Chen, 2007). Additionally, as we acknowledge the important role that parenting plays in health behavior, the role that decision-making plays in health behavior should not be excluded. In order to address current public health concerns associated with lifestyle-related diseases, understanding the decision-making process that children and adolescents engage in before arriving at a particular health behavior should be considered in future studies.

The review has considered health behavior as a homogeneous construct which presents limitations methodologically within the review. Health behaviors are complex and vary from one another substantially. In allowing for a more heterogeneous understanding of health behavior and its associations with parenting approaches future studies should consider specific health behaviors, such as physical activity, eating habits, and screen-time behaviors rather than using a broad and overarching construct such as health behaviors which may present limitations in both the search strategy and extraction of studies.

Additionally, another limitation that has emerged within the review related to the understanding of the role of parental approaches has been the lack of considering the differential role that maternal and paternal caregivers play in the associations related to healthy lifestyle behaviors. Inconsistency in maternal and paternal parenting approaches has been identified (Rinaldi & Howe, 2012), and therefore, a recommendation for future research would be to consider the differential role that maternal and paternal parenting could play in the associations presented within the review. Furthermore, the role of paternal parenting too has changed as a result of social and historical changes in terms of paternal involvement in parent-child interactions (Cabrera, Tamis-LeMonda, Bradley, Hofferth, & Lamb, 2000).

Future research should also consider the role that society plays in the conceptions of positive and negative parenting, as what is considered negative parenting in Western societies are considered positive in other societies. This difference in societal conceptions of parenting can be seen in authoritarian parenting that is considered detrimental to child development in Western societies but in Asian societies, the opposite is found (Ang & Goh, 2006; Chao, 2001).

Conclusion

Parenting has played an important role in the development of children and adolescents. The review identified parenting approaches associated with health behaviors of children and

adolescents. The findings presented, in the review, might aid recommendations for program development and implementation particularly in addressing some of the lifestyle-related diseases that pose a threat to children and adolescents.

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