

Understanding Media Influence on Parental Perspectives Towards Child Obesity Prevention

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ABSTRACT

The advocacy for children's health and wellness through multiple media platforms is pertinent in raising awareness among parents as the World Health Organization (WHO) identified child obesity as one of the most serious public health challenges of the 21st century. Malaysia is currently ranked with the highest obesity population in Southeast Asia, a clear indication that intervention campaigns implemented to improve the obesity conundrum in the past have met with little success. Although studies have shown that parents exercise considerable influence on nutrition and eating habits of children, their information-seeking habits in their position as decision makers of the household remains a significant oversight. Therefore, effective health communication strategies in the media targeted towards this segment highlight the importance of child obesity prevention information, particularly among low-income groups in urban communities. This study examined media and communication strategies on child obesity by exploring how parents negotiate information to ensure children abide by healthier practices. In doing so, a diary study was conducted to observe behaviours of the target group in dealing with information on child obesity on a daily basis. The result of the study is congruent with the assumption that parents have great potential to organically formulate child obesity prevention plans with their extent of exposure towards media messages. Henceforth, the role of media is seen as a highpoint in creating awareness on health communication strategies that can further engage and assist Malaysian parents for a more sustainable future for their children.

Keywords: *Child obesity, health communication, media strategies, new media, social marketing.*

INTRODUCTION

The Malaysian Ministry of Health (MOH) had in the past implemented awareness campaigns through mainstream media, which among them included the advocacy of healthy eating, the importance of physical activity and the "Tak Nak!" anti-smoking campaign management to improve levels of national health (Shaleh, 2020). One of the earliest and most prominent awareness campaigns were *Kempen Cara Hidup Sihat* (Healthy Lifestyle Campaign) that rolled out after the 1996 National Health and Morbidity Survey (NHMS), which concluded that 16.6% of the population are overweight whilst 4.4% are obese (Khambalia & Seen, 2010; Lim, 2014). Subsequently, the *10,000 Langkah* campaign was launched in 2010 to encourage physical activity among the public (Rosli, 2017). However, NHMS reports after 2011 showed no signs of the figures decreasing (Institute for Public Health & Ministry of Health Malaysia, 2014). MOH then changed its strategy by enhancing engagement through new media, specifically the MyHealth Portal, as part of the Eleventh Malaysia Plan (2016-2020) that aimed to strengthen information and communications technology (ICT) readiness and integration

through eHealth (Ministry of Health Malaysia, 2016). Furthermore, MOH implemented an initiative to develop health education materials and interventions through social media.

Despite rigorous efforts in advocacy and health communication, the focus on child nutrition and obesity is at present still of lower priority as a survey revealed that children's healthy lifestyles are not receiving the attention they deserve by parents. Studies have indicated that children under the age of 18 are oblivious to media content related to nutrition and wellness; rather, their consumption factors are often emotional and social in nature (Holmberg, 2018; Ragelienė & Grønhoj, 2021). Further to this, the prevalence of child obesity in Malaysia has seen a significant rise in the past five years, from 11.9% to 14.8% (National Institutes of Health, 2020). The global COVID-19 pandemic not only increased the likelihood of obesity due to travel restrictions as well as sedentary lifestyles, but its side effects also impacted those who are obese with more complications compared to those who are not obese (Gao et al., 2020; Sattar et al., 2020; Yang et al., 2021). Henceforth, the extent of information-seeking and levels of awareness among parents is instrumental towards a child's development to curb risks related to obesity.

The media can play a tremendous role to present nutrition and wellness experiences on both traditional and social platforms to stimulate the decision-making process among media consumers, namely parents, on obtaining and preparing meals as well as planning physical activities due to increased literacy on health (Ragelienė & Grønhoj, 2021). The double-edged sword of the media has the potential to introduce non-communicable diseases among local communities through persuasion, fear, emotion, and various other elements that can change behaviours and attitudes regarding subject matter (Ataguba & Ataguba, 2020; Guo & Bian, 2019; Luo et al., 2021; Shaleh, 2020; Shimoga et al., 2019). Furthermore, the recently released 12th Malaysia Plan underlined the importance of developing effective child obesity intervention programs by focusing on parental and caregiver participation, inculcating positive food culture and the identification of sociocultural factors through media campaigns for child obesity prevention (Nor Asiah et al., 2021). The understanding of parents on health communication strategies and becoming part of the solution to child obesity issues in Malaysia is becoming more pertinent at present. Henceforth, the study aims to examine the influence of health communication strategies in Malaysian media; and subsequently analyse parents and caregiver perspectives on child obesity prevention.

LITERATURE REVIEW

Health Communication and Intervention in Malaysia

Mata and Hertwig (2018) state that “[...] policymakers, scientists, and many citizens agree that the global obesity epidemic requires a forceful response [...]”. A cross-sectional study summarised that urban low and middle-income or better known as the B40 communities showed significantly higher obesity than at national level (Andoy-Galvan et al., 2020; National Institutes of Health, 2020). At the same time, parents in low-income areas often face challenges when building healthy lifestyle practices among their children, leaving them with misconceptions about the state of health of their children, henceforth their indifference or inability to intervene (Nobari et al., 2018). The salient issue is that many parents typically have some understanding on child obesity prevention strategies, but they are unable or unwilling to apply their knowledge into practice to help their children develop a healthy lifestyle (Appleton et al., 2017). Effective parental interventions may rely on a sound theoretical understanding of their potential behavioural determinants and what could have been the

deterrent to this matter (Butler et al., 2019; Chai, 2020). Current research on the perceptions of Malaysian parents towards media messages on child obesity has not been explored.

Culture and Socialisation

Amongst others, culture comes into play in determining how parents evaluate the development of their children. A study in rural Malaysia showed that nearly half of the parents considered their overweight children to be normal and found no correlation between parents' knowledge of nutrition and obesity with their ability to identify whether their children are overweight and obese due to denial and the inability to deal with it in an efficient manner (Nor et al., 2020). At most, obesity is commonly related to wealth and having sufficient resources in raising the child in a comfortable environment. However, even though the Malaysian Ministry of Health frequently updates its nutritional guidelines on its publicly accessible e-portal; little is known if members are all able to interpret given dietary recommendations. Moreover, in a society where computers and smartphones are an integral part of daily life, social media such as *Facebook*, *Twitter* and *Instagram* are increasingly being used for promotion for public health, and access to information through these media platforms are preferred by young parents. Studies confirmed the effectiveness of social media-based health interventions in weight management, and in promoting health awareness and knowledge where social media serves to send reminders to encourage participants to engage in healthy habits that facilitate positive behaviour and attitudes (Guo & Bian, 2019; Trude et al., 2019).

The Theory of Planned Behaviour (TPB)

The Theory of Planned behaviour (TPB) offers a comprehensive framework for understanding and promoting behavioural change (Andrews et al., 2010), whilst it also underscores the significance of involving parents as crucial drivers in child obesity prevention. Correspondingly, study by Lim et al. (2020) affirmed that TPB-based studies facilitate the exploration of addressing the issue of enhancing healthy dietary behaviours among children. Ajzen (1991) developed TPB to bring an idea that individual intention determines behaviour, which in turn is influenced by *Attitude*, *Subjective Norm*, and *Perceived Behavioural Control*. Although the TPB model has been used primarily to predict behaviour, Ajzen likewise claims it allows for the exploration of factors that influence decisions to encourage healthy lifestyles (Ajzen, 1985). Although TPB is mostly deployed as a framework in quantitative research methods, scholars such as Baloch et al. (2020) and Davidson and Vidgen (2017) have successfully applied TPB constructs to analyse the factors that influence individual behaviour qualitatively. Similarly, this paper emphasises the aspects of demographic factors, work, time and lifestyle, and perceptions of child weight in influencing parental interventions for child obesity, thus confirming the feasibility of using a qualitative approach to investigate the factors influencing parental interventions for child obesity.

A range of key beliefs on parental and caregiver behaviours is known to have shaped future health interventions for children at risk. A cross-sectional study investigated the influence of TPB constructs on mothers in creating healthy eating habits and identified barriers to health interventions for children such as significant parental involvement (Lim et al., 2020). It further suggested that future intervention strategies should involve other family members as well to display positive eating habits towards children. Other studies have also applied an extended TPB model by adding variables to better explain positive parent-for-

children behaviours, for example; planning of good meals, nutrition and physical activities. It was summarised that this self-regulatory strategy may lead individuals to effectively act on their intention to achieve healthier eating habits, therefore, the planning mediates the intention-behaviour relationship (Hamilton et al., 2020).

In short, parents in Malaysia face challenges in addressing child obesity in their culture, socioeconomic status and environment. Many health campaigns were implemented by relevant agencies to call for better habits and lifestyle practices among those in the population, posing a new challenge in the effectiveness of media and communication as there was no particular focus on child obesity. Exploring the perception of parents towards media messages on child obesity prevention could bring key information to developing improved communication strategies on the issue.

METHODOLOGY

This paper employed a qualitative diary study to understand the influence of communication on child obesity prevention in the media towards Malaysian parents and caregiver perspectives. According to Hyers (2018) the diary method would be ideal for examining child care routines which is a daily, long-term practice and a tool to support and investigate parent-for-child health behaviours (Hamilton et al., 2020). While diaries serve as a valuable tool for capturing intricate facets of daily experiences, this approach circumvented potential recall challenges often associated with methodologies reliant on retrospective recall (Holloway, 2003).

Sampling

We established a target sample size of five participants, encompassing the Malay, Chinese and Indian ethnicities. The sample size of participants was determined through reference to prior research that employed the diary study methodology (Taylor, Teijlingen, Ryan, & Alexander, 2019). The existing research has verified that TPB is a valuable framework for qualitatively investigating the primary factors influencing particular behaviours. It also helps in pinpointing essential intervention messages to gain insights into behaviour-related strategies that are specific to a particular culture (Armitage & Conner, 2001; Zoellner et al., 2012).

Participants were selected by means of criterion sampling, which is an approach that is commonly used in phenomenology (Moser & Korstjens, 2018). The most salient criterion within this sample is the experience of the participant with the phenomenon under study. The study observed the common lived experiences or behavioural outcomes of the participants and conducted the study based on their individual characteristics. For instance, a phenomenological study on the selection of nutrition intake of rural mothers for their young children recruited women of different levels of age and schooling who live in a rural area (Baloch et al., 2020). Taylor et al. (2019) confirmed through a diary study of five first-time breastfeeding mothers that collecting in-depth qualitative data from small samples of specific populations can generate sufficient information for researchers to analyse. In line with this, another qualitative diary study on pregnant women's hospital experiences also opted for a small sample size of six (Elliott-Mainwaring et al., 2021). Therefore, the sample size of five participants for this present study is sufficient.

Data Collection

Recruitment and data collection took place from March to June 2022. Taking into consideration the focus on parents residing in urban areas of Malaysia from diverse ethnic communities for this study, recruitment efforts were employed both offline and online. The principal investigator utilised a combination of online platforms, including WhatsApp, Telegram, and Facebook groups, to distribute participant recruitment information. Five parents were confirmed to have met the specific requirements of the study design to commence the diary studies as per below:

Table 1: Participant demographics for diary study

Sample	Parental Role	Age	Ethnicity	Education Level	Number of children	Children's BMI	Children's age	Family Type	Household Income Type
S1	Father	35-50	Chinese	Bachelor	1	19	11	Nuclear Family	M40
S2	Mother	25-35	Chinese	PhD	1	13.9	6	Nuclear Family	M40
S3	Mother	25-35	Malay	Master	3	15.6 14.4 13.2	11 8 5	Extended Family	M40
S4	Mother	35-50	Malay	Diploma	4	17.2 16.6 15.8 17.3	10 9 7 5	Nuclear Family	M40
S5	Father	35-50	Malay	Diploma	1	18.7	10	Nuclear Family	M40

Two fathers and three mothers participated in the diary study. There were two younger parents aged 25-35 and three parents aged 35-50. The educational levels were diverse, with two participants having a Diploma, one with a bachelor's degree, one with a PhD degree, and one with a Master's degree. In terms of the number of children, three families had only one child, one family had three children, and another family had five children. The BMI values for all children were calculated based on the age, height, and weight provided by the parents using a reputable website (CDC, 2022) and the results were within the healthy weight range. The location of the study is in the Klang Valley region, which is a cluster of cities in Malaysia centred on Kuala Lumpur and includes adjoining cities and towns in Selangor (Chatham & Mixer, 2020; Dutta et al., 2019; Hassim et al., 2021; Qian & Hassim, 2022). Based on the understanding of the trend of child obesity prevalence in Malaysia in the previous literature review, the target group of the current study is mainly from urban areas in Malaysia, and this area of Klang Valley is more economically developed, people live more conveniently, and also presents a higher rate of child obesity.

Instrument

According to Duncanson et al. (2013), Theory of Planned Behaviour (TPB) applied to child nutrition and health literacy of parents can explain the discrepancy between parents' feeding intentions as well as factors that influence them such as information on diverse media

platforms. The diary study is grouped into predefined sets, with each relating to an element of TPB that would relate to the daily routine and information seeking of parents.

Table 2: Diary entries framed based on the Theory of Planned Behaviour

TPB Component	SN	Diary Entry
Attitude (A)	E1	Did you prepare the meals or grocery shopping for your children today? (Being involved in cooking or making food decisions is also included) If yes, please recall your practice and rate the meal or consumed production / If no, describe the reason and what you know about today's children's diet.
	E2	Has your child engaged in an unhealthy behaviour today that you believe is not beneficial to preventing child obesity? Please describe what you do and what you thought about it?
Subjective Norms (SN)	E3	What factors or circumstances have motivated you to support your children to practise healthy eating habits?
	E4	How did you get health information on a healthy lifestyle to prevent child obesity for your children? Has it had an impact on you? Why?
	E (4)	Can you recall anything in the last month that made you realise the importance of helping children develop healthy lifestyles to prevent child obesity? Please describe in detail
Perceived Behaviour Control (PBC)	E5	Have you suggested to your children to eat healthier or increase physical activity today? Please describe the situation.
	E6	How much do you think your child has been influenced by you to engage in a healthy lifestyle to prevent child obesity?
	E7	Did you encounter any challenges when you want to ensure your children abide by healthy practices? Have you figured out a solution for overcoming this problem? If so, please describe the situation.
	E8	Is there any part of your health practices for children that you think could be modified? Describe the reason.
	E (8)	Do you try to overcome the challenges of time constraints and try to prepare your child's food yourself or exercise with your child today? If yes, please describe your practices. If not, please describe your thoughts.

Table 2 indicates that each of the issues in the current diary entry is consistent with the structure of the Theory of Planned Behaviour. These questions are filled in daily by the participants through Google Forms. There are eight issues that make up the daily thoughts and practices that parents are required to record. Participants began a 7-day diary recording based on predetermined diary entries and daily recording sheet. The researcher would send a link of the Google form at 5 p.m. each day through e-mail correspondence. After 7 days of data collection, the contents of these collected diaries will be collated and evaluated.

FINDINGS AND ANALYSIS

Holloway and Todres (2003) argue that thematic analysis should be seen as fundamental to a diverse, complex, and nuanced approach to qualitative analysis. David and Sutton (2011) posited that thematic analysis often allows key themes to emerge from the data rather than being imposed on the researcher's own beliefs, which allows the researcher to be moderately present in the study). The themes which similar codes are aggregated together to form a major idea in the database. Creswell (2002) will be sought using the research questions and combining perspectives and concepts from several theoretical frameworks based on health and risk communications.

A hybrid deductive and inductive approach of qualitative methods of thematic analysis was deployed (Elo & Kyngäs, 2008; Zoellner et al., 2012) with priori codes for TPB constructs, mapped against dominant emergent theme codes that were developed as analysis progress. Following an iterative and deductive thematic analysis, a total of six significant themes were extracted as per Table 3. Next, the data are classified according to the three important components of the Theory of Planned Behaviour, firstly; (1) *Attitude*: Parents' attitudes towards helping children develop healthy lifestyle habits to prevent child obesity, in which the theme of *Responsibility and Accountability*, and *Health Consciousness* were been identified; secondly, (2) *Subjective norms*: the influence of subjective norms on parents' efforts to help children develop a healthy lifestyle and prevent child obesity, where the themes of *Perceived Media Framing* and *Social Networks Influence* emerged in the data analysis; and thirdly; (3) *Perceived behaviour control*: parents' subjective assessment of their efforts to help children develop a healthy lifestyle and prevent child obesity, where the themes of *Normative Influence* and *External Barriers* will also be discussed.

In short, the data obtained deliberated the role of media towards influencing behaviour and motivation of parents who can positively participate in supporting children to develop healthy lifestyle habits and will be further discussed in the following sections.

Attitude

This component refers to an individual's overall evaluation of a behaviour as positive or negative. It is one of the three main influences on an individual's behaviour as advocated by TPB along with subjective norms and perceived behavioural control. E1 and E2 diary entries mainly focused on examining parents' attitudes towards issues related to child obesity intervention. Therefore, codes that emerged from the data analysis process and provided examples of each were outlined.

Attitude - Responsibility and Accountability

Through the thematic analysis, it can be found that there is a strong sense of ownership and commitment towards the role of parents. They recognise the significance of their influence on the health and well-being of their children and take proactive measures to fulfil their responsibilities. They exhibit a heightened awareness of the importance of instilling healthy lifestyle habits in their children to prevent issues such as child obesity. To better understand the themes that emerged from the data, the following matrix presents codes that were generated from the coding process. In the ensuing discourse, the symbol 'S' denotes the identification code assigned to each participant.

Table 3: Coding matrix for theme 1- responsibility and accountability

Code	Evidence
Food preparers	<i>Cooked by mother (S2)</i> <i>Myself (Mother) (S3)</i>
Health decisions making	<i>Myself (Mother), To diversify vegetable food. (S4)</i> <i>Our household loves egg and we eat eggs for breakfast, lunch, and dinner. Eggs are easy and versatile to cook, and they go with any food you like. (S2)</i>

Perception of parent's role in child obesity issue	<i>As a mom, I will monitor their intake of junk food and high-sugar drinks. (S4)</i> <i>We as parents as their role model. What eat healthy foods. He will follow us eating healthy foods. (S5)</i>
Take action	<i>I bring him go out for a jog. We jogged about 30 minutes. Jogging is good for cardio and metabolism. (S5)</i> <i>I gave them a small quantity and they were not allowed to have seconds. If they still wanted to eat, I gave them dragon fruit and pear. I feel that they need to know the limit of unhealthy food intake. (S4)</i>
Expectations on other support	<i>My mum called us and told us to take care of ourselves by eating healthy and balanced meals. I expected more psychological support and experience from her in caring for my children, and I think I would take. (S2)</i> <i>The meal of school cafeteria is not a healthy meal but it's not too oily so it's okay. (S3)</i>

Table 3 deliberated the matrix on parental **responsibility and accountability**. This analysis aims to delve into the perspectives and beliefs that parents hold regarding their responsibilities and obligations in promoting and maintaining their children's health and well-being, specifically in relation to preventing child obesity. S2 claimed that she is the sole caregiver who prepares meals for her child daily. In line with this, it was observed that the responsibility for preparing meals for the children primarily rests with mothers. Working mothers took on the daily task of cooking for their children outside of their work commitments. Only one participant indicated that the father shared the responsibility of preparing breakfast. This indicates that regardless of the situation, both or either parent would play a crucial role in ensuring children's healthy dietary practices.

Further to this, participants agreed that parents should take a leading role in assisting children with healthier eating habits. The statement from S4 showed that attitudes towards making healthy decisions during grocery shopping play a significant role in shaping dietary habits of children and overall health. Similar to S4, S2 reflected that the existing and overall eating habits practised by the family have a positive influence on parents' decision-making concerning nutrition and food preparation. Moreover, willingness to actively undertake healthy activities demonstrates the positive intention of parents in helping their children develop healthier lifestyles. On the opposite note, negative attitudes on health decision-making may be caused by a lack of concern for healthy food choices, a preference for convenience over nutrition, or a limited understanding of the importance of a balanced diet.

Attitude-Health Consciousness

The theme of parental **health consciousness** is identified through the analysis of parents' diary entries which describe the daily food preparation for their children, their decision-making process regarding grocery shopping, and their thoughts and practices concerning children's unhealthy behaviours. Furthermore, these parents already have existing knowledge about healthy eating practices, thus they prioritise and actively engage in behaviours that support and encourage their children to adopt healthier lifestyles. With that said, these parents demonstrate a proactive attitude towards seeking information to help their children develop healthy lifestyles. Additionally, they actively seek out reliable information and resources to guide their decision-making process and apply this knowledge in the upbringing of their children.

Table 4: Coding matrix for theme 2- health consciousness

Code	Evidence
Knowledge of healthy practices	<p><i>I prohibited my child to have dinner while watching TV, I think it is not healthy and bad for our body digestive system. (S1)</i></p> <p><i>This meal is very healthy because Salmon is rich in omega-3 fatty acids which can decrease inflammation and support brain health. I intentionally incorporate Salmon into our diet at least once a week. (S2)</i></p>
Health information seeking	<p><i>I think I have limited health knowledge on healthy eating. Because my background is not a healthcare worker. But I will try to search more information online to help my child stay healthy. (S5)</i></p> <p><i>Book reading and articles reading online. Yes. More ideas how to improve healthy lifestyles. (S1)</i></p>
Awareness of health risks	<p><i>Social media has a huge influence on kid's daily habits. It is difficult to control their screen time as they grow older. (S2)</i></p> <p><i>Uncontrolled nutrition can lead to various diseases in children, such as diabetes, cancer, and organ dysfunction. I do not want my children to be sick. It incurs high costs for medical treatment and their inability to live as children. (S4)</i></p>
Health monitoring	<p><i>I always monitor my child for types of food intake and have a walk after eating to help the digestive system. (S1)</i></p> <p><i>I control the children's diet to limit their consumption of unhealthy foods by informing them about the effects of the food they eat. I will show them videos about the effects of unhealthy eating habits as a way to educate them (S4)</i></p>
Balanced and flexibility practices	<p><i>I have to keep on trying different menus for them. Some new items in the menu will need a test drive first. I let them try by themselves so that they know they will not be judged no matter what but the willingness of trying and might loving it is to be celebrated. (S3)</i></p> <p><i>Sometimes they follow, sometimes they don't. So, I have to encourage them in a positive way in order for them to eat healthier but it does help to improve their physical activities of the day. (S3)</i></p>

Table 4 indicates the matrix for the theme of parental **health consciousness**. The knowledge of healthy practices encompasses an investigation of parental awareness on recommended guidelines, scientific findings, and best practices in children's health. S1 demonstrated awareness of the digestive system and suggested an understanding of the importance of proper digestion for overall health among parents. This statement reflected a health-conscious attitude and a desire to prioritise mindful eating practices for their children. It is important to recognise that health-conscious parents have the ability to apply such knowledge to support healthy lifestyles of their children. S2 included salmon as a regular part of meals, suggesting that the parent sought to provide her family with the nutritional benefits associated with this specific food. Therefore, these parents are conscientious in their efforts to create a healthy food environment that goes beyond individual meal choices. It involves fostering a holistic approach to nutrition that extends to meal planning, grocery shopping and food preparation. They all exhibited a proactive approach in gathering information on promoting healthy lifestyles among their children to prevent child obesity.

It is interesting to note that there is a display of heightened sensitivity to messages related to the health of children and willingness to explore relevant knowledge in this field through both traditional and new media platforms. S4 highlighted efforts to monitor the children and educate them about the effects of unhealthy foods through informational videos. In doing so, the parent aims to provide their children with both practical guidelines and knowledge to make informed choices regarding their diet. This approach aligns with the Theory of Planned Behaviour by shaping the children's attitudes, subjective norms, and perceived behavioural control related to healthy eating habits. By using a kid-friendly approach, the parent aims to effectively convey the importance of limiting screen time to their children, promoting their understanding and cooperation. This approach encouraged a more flexible and balanced lifestyle for children.

Subjective Norm

The emphasis on subjective norms contributes to the understanding of the overall perceived social pressure or subjective norms of individuals, which influence their decision-making process for particular behaviours.

Subjective Norm - Perceived Media Framing

Media framing refers to the way in which media organisations present and shape news and information. Different framing can elicit different emotions, attitudes, and beliefs that ultimately influence public opinion and decision-making. Thus, current parents' perceptions of healthy lifestyles for children and topics related to child obesity presented in the media play a significant role in influencing their perceptions of success in helping children develop healthy lifestyles.

Table 5: Coding matrix for perceived media framing

Code	Evidence
Social media usage	<p><i>I scroll through Instagram on people promoting healthy eating and foods to prevent obesity among children. (S5)</i></p> <p><i>Facebook social media said healthy lifestyle is important for childcare development. I took the knowledge into consideration. (S1)</i></p> <p><i>There are lots of posts on Xiaohongshu on how to cook healthy meals for your child. I sometimes scroll on the app and they just popped on my feed automatically. (S2)</i></p>
Health behaviour norm	<p><i>There are many channels that provide information about healthy lifestyles, such as Instagram, Facebook, Twitter... They have an impact on me to encourage a healthy lifestyle for my children so that they do not become obese and develop chronic diseases. (S4)</i></p> <p><i>I generally obtain information on healthy lifestyle though social media platforms such as YouTube. They have many videos showing how to cook simple, healthy, and nutritious meals. (S2)</i></p>
Health risk awareness	<p><i>They convey news about the positive and negative effects to children who follow a healthy lifestyle and those who do not follow a healthy lifestyle. The impact greatly affects the long-term well-being of the children. (S4)</i></p> <p><i>On Instagram, there is a post about a child who has diabetes and requires hospital monitoring, unable to lead a normal life like usual. The child's daily intake of sweetened beverages and lack of plain water consumption may have contributed to the development of diabetes. (S4)</i></p>

Table 5 outlines codes pertaining to the **perceived media framing** theme, applied as an injunctive normative belief to scrutinise the impact of media on parents through subjective norms. Diary entries revealed daily social media exposure, leading to socially endorsed notions on fostering child health via media and guiding daily practices. Parents adopted health behaviour norms through media, enhancing health risk awareness. The social media usage code underscored parental recognition of media platform influence on their attitudes. Consequently, positive social media messages bolstered children's healthy eating norms and shaped parental behaviour in line with social expectations. S5 noted Instagram as a credible source, exposing parents to health-promoting influencers and fostered subjective norms around child wellness and health. The presence of influencers created a necessity for parents to align with social media norms. Thus, parents deem social media valuable for health insights that shaped their diet positively. S4 highlighted health norms through platforms such as Instagram, Facebook, and Twitter, informing parents on the promotion of child health. Similarly, S2 detailed daily information-seeking on health via social media, internalising societal health expectations.

Subjective Norm - Social Network Influence

The theme of **social network influence** refers to the influence of social networks and the impact of others on the behaviour of parents. It argues that decisions of individuals and actions are influenced by the social norms and expectations by their social networks, which include family, peers, and health professionals.

Table 6: Coding matrix for theme 4- social network influence

Code	Evidence
Role expectations from family	<i>We went to the grandparents' home, mother-in-law reminded my wife that the recent weather is too hot, must give the child to drink more plain water, at the same time should give the child some nutritious soup. (S1)</i> <i>My mum called us and told us to take care of ourselves by eating healthy and balanced meals. (S2)</i>
Peer influence	<i>I went out with one of my friends today whose son is one year younger than my son. She refused to buy ice cream and cakes for his son when he was asking for it. I sometimes would agree to buy him desserts if he begged for it so desperately. (S2)</i> <i>From my colleagues. I asked for some advice from my friends because some of them have sufficient knowledge on healthy eating and diet. (S5)</i>
Guidance from health professionals	<i>Went to hospital to see nutritionist and dietitian to encourage my children to eat and stay healthy. (S1)</i> <i>Support group from medical doctors and nurses. They have good knowledge to prevent obesity among children. (S5)</i>

Table 6 presents the codes for the theme of **social network influence**. The quotes suggested that parents perceived a social norm within their family that emphasised the importance of promoting healthy lifestyles for their children. Family members, such as grandparents, siblings, or other close relatives, may express explicit or implicit expectations for parents to fulfil their role in ensuring the well-being of their children and in preventing child obesity. The opinion shared by S1 implied that the grandmother had highlighted and reminded her about her role as a parent. It suggested that the parent perceived a social norm

within their family that emphasised the importance of maintaining a healthy and balanced diet. The elders served as role models and source of guidance, demonstrating the significance of healthy eating practices. Accordingly, this code highlighted how family expectations can shape attitudes and behaviours of parents towards promoting a healthy lifestyle for their children, indicating the role of family influence in fostering positive health practices.

The code of peer influence is identified through the influence and guidance that friends, peers, or individuals of parents in the same social group have on their personal attitudes, beliefs, and behaviours. The statement made by S2 implied that the influence of peer behaviour on parental decision-making regarding healthy eating was from the observation of their friends which sometimes would cause themselves to act differently and favourably towards the pleas of their own children. This contrast triggered a process of self-reflection, leading parents to question their own behaviour and consider if it is consistent with the healthy behaviour that is expected from their child. This transcript highlighted the role of peer influence in shaping the attitudes and behaviours of parents toward the food choices made by their child.

Perceived Behaviour Control

Perceived behaviour control is based on the belief that individuals perceive themselves as capable of engaging in or completing a specific behaviour. Some of these resistance factors align with the possible challenges mentioned in the previous section.

Perceived Behaviour Control - Control Factor for Intervention

The code control factor for intervention represents the obstacles or barriers that parents perceive in preventing child obesity. This code was identified as parents mentioned several situations in their diaries where they faced challenges in implementing healthy practices, whether related to healthy eating, physical activity, or reducing sedentary behaviours.

Table 7: Coding matrix for theme 5 - control factor for intervention

Code	Evidence
Detrimental effects of media	Most children are exposed to social media such as IG or TikTok, which show many side effects of unhealthy eating habits. (S4) Too much digital gadgets such as iPad, phone computer etc. Addicted to gadget and online games. Such as mobile legend and so on. (S1)
Culture norm	Since its the festive season, the kids are exposed to sugary drinks. (S3) My son is eating chocolate, boxed drinks, nuggets, and junk food because there is a school holiday celebration today. (S4)
Community influence	When he is at school, he has to have what the school is offering for lunch. There are not too many options. (S2) The surroundings, peer pressure and TV sometimes influenced them on what kind of foods looks/seems yummiier than the healthier ones. (S3)

Table 7 presents codes reflecting challenges in fostering child health and preventing obesity within the **control factor for intervention** theme. The diary entries by S4 highlighted the susceptibility of children to detrimental influences from platforms such as Instagram and TikTok, potentially fostering unhealthy eating habits. This underscores the need for heightened awareness on media impact towards children's dietary choices. Moreover, the

role of digital media in promoting sedentary behaviour, as seen in excessive device use and gaming highlighted by S1, emerged as a pivotal control factor. The perspective of S4 aligned with the notion that holidays relax parental supervision thus streamlined with cultural norms of indulgence. Meanwhile, cultural sway posed challenges in steering children away from unhealthy options. The entry by S2 emphasised community influence, particularly schools that impacted parental control in nurturing healthy lifestyles. The community influence code revealed the impact of external elements, such as school-provided meals that do not meet health standards henceforth highlighted the role of schools in shaping a child’s diet.

Perceived Behaviour Control - Self-efficacy of Parental Intervention

The **self-efficacy of parental intervention** is primarily reflected in the evaluation of parents on their ability to help children maintain a healthy lifestyle. Parent self-assessments of whether they can achieve their intended goals directly influences their engagement in practices related to child health.

Table 8: Coding matrix for self-efficacy of parental intervention

Confidence in dietary preparation	Of course, I did, I strongly encouraged and cook healthy foods based on food pyramid for my child. So that he grows healthy. (S1) Yes, I do control what they eat and what to prevent. I give them extra vitamins for their immune system. (S3)
Self-assurance in promoting physical activity	Yes, I motivated my children to exercise and gym. If he follows, I will give him a reward in terms of pocket money. (S5) I took my child for a walk in the field for 15 minutes and invited them to go up and down the stairs three times for a physical activity today. (S4)
Belief related to overcome challenges	I think I can encourage him to do more exercise by playing football and swimming with him. But sometimes it is difficult due to time pressure. I think I will do so more often in the future. (S2) Yes, time is limited because all of us are busy. If we buy takeaway from outside. We try to choose healthy foods. The price is a bit pricey but healthy. (S1)

As per Table 8, parents manifested their confidence in preparing nutritious meals for children. Statements by S1 exhibit self-efficacy in aligning food choices with the food pyramid guidelines. This resonated with the self-efficacy theme, reflecting perceived control over diet preparation. This confidence aligns with their belief in offering balanced meals and boosted their commitment to inculcate healthy eating habits. Correspondingly, S3 highlighted confidence in supporting children's nutrition intake, signifying self-assured health decisions. Elevated self-efficacy propelled more health intervention initiatives among them. The diary by S5 underlined promotion of child physical activity by parents through motivation and rewards, displaying assurance in guiding exercise engagement.

Discussion and Conclusion

This study revealed the influence of media on parent and caregiver perspectives on child obesity prevention. The findings observed that these parents were significantly influenced by media communication in their daily lives, leading to a notable impact on their perception of child obesity prevention. Building upon the research by Bozzola et al. (2021), the affirmative impact of social media on facilitating healthy exchanges among children and

adolescents is underscored. Parents can acquire self-belief regarding effective intervention strategies for child obesity through social media channels. In line with it, the data lends support to the arguments put forward by Bryan et al. (2020), parents often utilise social media to search for information related to child health, including peer practices on online platforms and expert information from health portals, which serves as a subjective norm that influences behaviours of parents and subsequently affects their perceptions of good lifestyle practices with their children. This is supported by the study of Melovic et al. (2020) and Pretorius et al. (2019). Therefore, the media framing on child obesity issues in social media has become a significant subjective norm among Malaysian parents. The study by Qian and Hassim (2022) of six Malaysian dailies and MyHealth Portal found that compared to English dailies, Malay dailies and MyHealth Portal provide insufficient coverage of child obesity issues. Accordingly, it is necessary to develop effective communication strategies based on social media specifically targeting parents from different cultural and social backgrounds.

Based on TPB, the present data provides a preliminary understanding of the factors influencing parents' intervention behaviours regarding child obesity, thereby contributing to perspectives on effective health communication strategies for targeted parents. According to Ajzen (2020), the study encompassed three key components of TPB - attitudes, subjective norms, and perceived behaviour control. The findings indicate that attitudes of parents play a pivotal role in shaping intention and behaviours of young children towards adopting healthy lifestyles. The data lends support to the arguments put forward by Berry (2020) and Ziser et al. (2021), that the attitude of parents towards responsibility and accountability in raising their children are regarded as crucial aspects, where they possess the authority to make instrumental nutritional and health decisions on behalf of their children. This signifies that health decision-making behaviours by parents are closely related to the well-being of their children. Supported by Ziser et al. (2021), actively taking responsibility for food preparation and promoting physical development of their children reflects the attitudes of parents as primary agents responsible for their future. In line with the study of Blanchette et al. (2019), the perception of a parent's role on child obesity issues could be applied in the parental intervention related to the knowledge they have gained from media exposure. Along the same lines, Butler et al. (2019) proposed the evidence gained from their information seeking would motivate parents to take action in preventing child obesity and participating in its intervention.

In summary, the current phase of research analysis emphasised the importance of attitudes, subjective norms, and perceived behavioural control in understanding and promoting positive behaviours among parents in helping children establish healthy lifestyles for the intervention and prevention of child obesity. By employing thematic analysis to examine the content of diaries from participating parents, a better understanding of the factors that influence the intention to engage in behaviours related to child obesity prevention can be obtained. This, in turn, can facilitate the design of effective health communication strategies that are more aligned with the needs of ordinary parents, aiming to enhance their engagement and foster healthy habits in children. In addition, this understanding can guide the development of targeted communication strategies to assist the general population in adopting these uncommon but proven successful practices, leading to a wider range of dissemination and impact.

ACKNOWLEDGEMENT

The authors would like to acknowledge the Foundation for Southeast Asia Studies (SEA Junction) for funding the grant SK-2022-013, managed by Universiti Kebangsaan Malaysia that is entitled: *Digital Storytelling on “Covibesity” Intervention among B40 Schoolchildren and Parents in Klang Valley*” that made this research possible.

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